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BONE CULTURE
OF
ANCIENT CHINA

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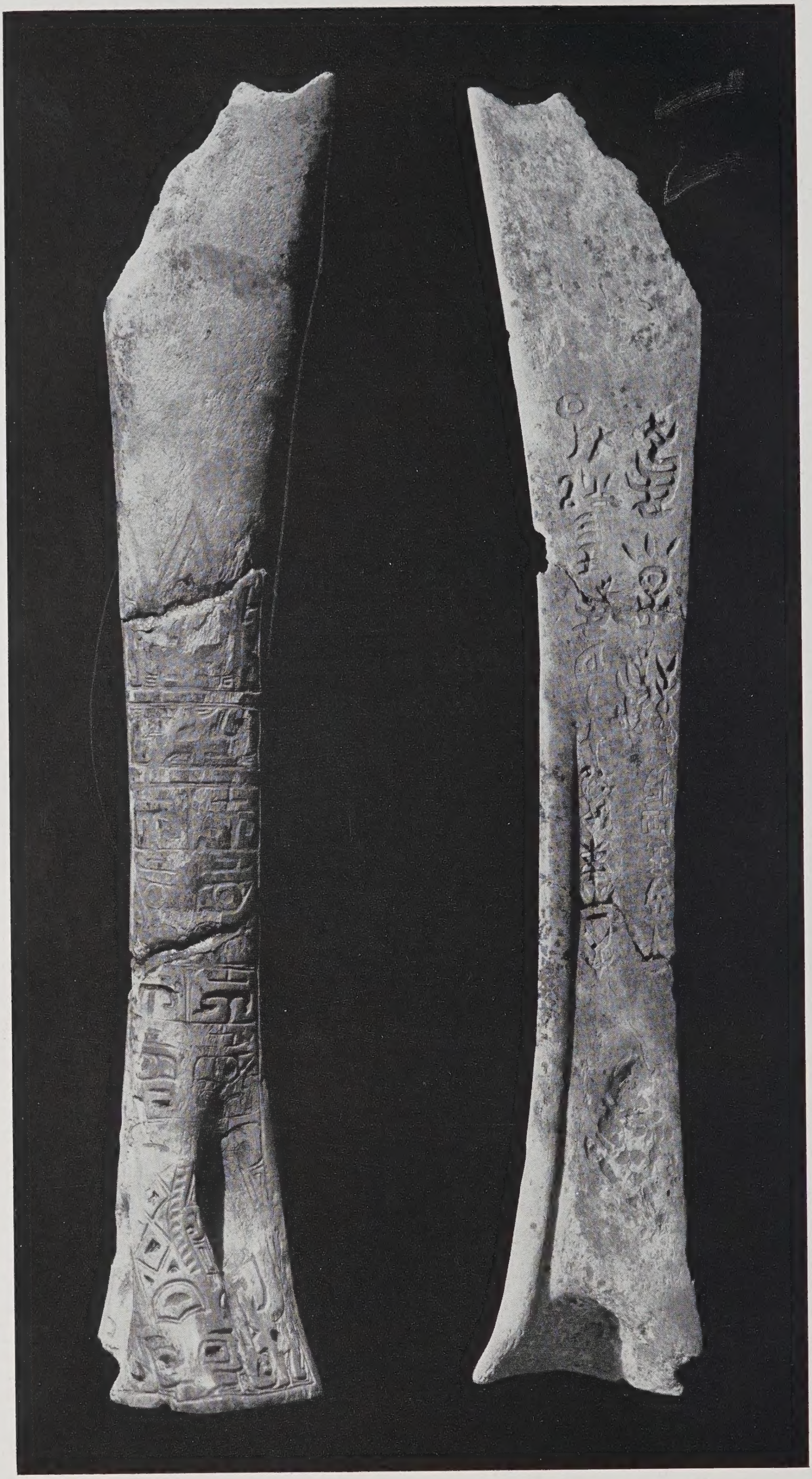
Frontispiece

Carved Bone Ceremonial Spatula

Inscribed, and dated approximately 1172 B.C.

(*See Plate XV*)



BONE CULTURE

OF ANCIENT CHINA

An Archaeological Study of Bone Material from Northern Honan, Dating about the Twelfth Century, B.C

by

WILLIAM CHARLES WHITE

Sometime Bishop of Honan,
Professor of Chinese Studies in the University of Toronto,
Keeper of the East Asiatic Collection of The Royal Ontario Museum

William C. White
Bp.

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Tombs of Old Loyang, Shanghai, 1934.

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TO
CHARLES TRICK CURRELLY, MA., LL.D., F.R.S.C.
DIRECTOR
ROYAL ONTARIO MUSEUM OF ARCHAEOLOGY
PROFESSOR OF ARCHAEOLOGY
IN THE
UNIVERSITY OF TORONTO

PREFACE

NOW that the war with Japan has ended, the archaeological excavations of the Academia Sinica, which have been brought to a sudden stop, will now doubtless be resumed.

One of the immediate results will be that the great mass of archaeological material unearthed at Anyang and Hsün Hsien, which had been carefully removed from danger zones and protected, will now be forthcoming and open to examination and study. The results should be most illuminating with regard to the high standard of culture of the Shang Dynasty in the period between 1400 and 1123 B.C. In view of this it might be thought premature to issue this Museum Study on *Bone Culture of Ancient China* for there probably will be much new bone material awaiting excavation. Yet a preliminary study of Shang bone objects may be of some value towards the interpretation of the larger mass of Shang bone material which inevitably will come to light.

This study is concerned entirely with bone material in the Chinese collection of the Royal Ontario Museum of Archaeology, but Part II brings in references to other Shang objects for purposes of parallel illustration.

It will be apparent that the section dealing with the inscribed oracle bones is not intended to be a comprehensive and thorough presentation of that theme, but only serves as an illustration of the possibilities of serious study of that material, which is of basic importance in the matter of determination of Shang chronology and culture and the interpretation of the parallel artifacts in bronze, pottery, jade, and stone. The great value of careful research in the bone inscriptions is seen in the monumental work recently published by Mr. Tung Tso-pin (Tung Tso-pin: *The Chronology of the Yin Dynasty*, *Yin-li-p'u*, 4 vols., Chungking, 1945).

The numbers given in connexion with each object illustrated are those of the index of the bronze, bone, and stone materials in the Chinese collection, the designating classification letters being NB. The illustrations, with the exception of the frontispiece, are all in line drawing, which is the method generally followed in this Royal Ontario Museum of Archaeology, and is one of the distinctive features instituted by the Director of the Museum, Professor C. T. Currelly, for record purposes.

One other feature which Professor Currelly has emphasized, and in the Chinese collection has consistently carried out, is that of having the galleries containing the Chinese material arranged in historical sequence so that the galleries begin with the groups of the earliest material of whatever nature it may be, and coming through the galleries in the designated sequence the visitor is able to appreciate something of the unbroken continuity of Chinese culture through the centuries.

Again we are under obligation to various members of the staff of the Museum, particularly to Miss Betty Maw, who did most of the line drawings of this study. The plates were made by the Rapid Grip and Batten Company, Ltd., of Toronto, under the careful personal supervision of Mr. Fred Hood. The University of Toronto Press has taken responsibility for the press work as with the previous issues of this series.

It is intended to follow this volume with another on "The Bronze Culture of Ancient China."

William C. White,
Keeper of the East Asiatic Collection,
Royal Ontario Museum

Toronto, Ontario, 1945.

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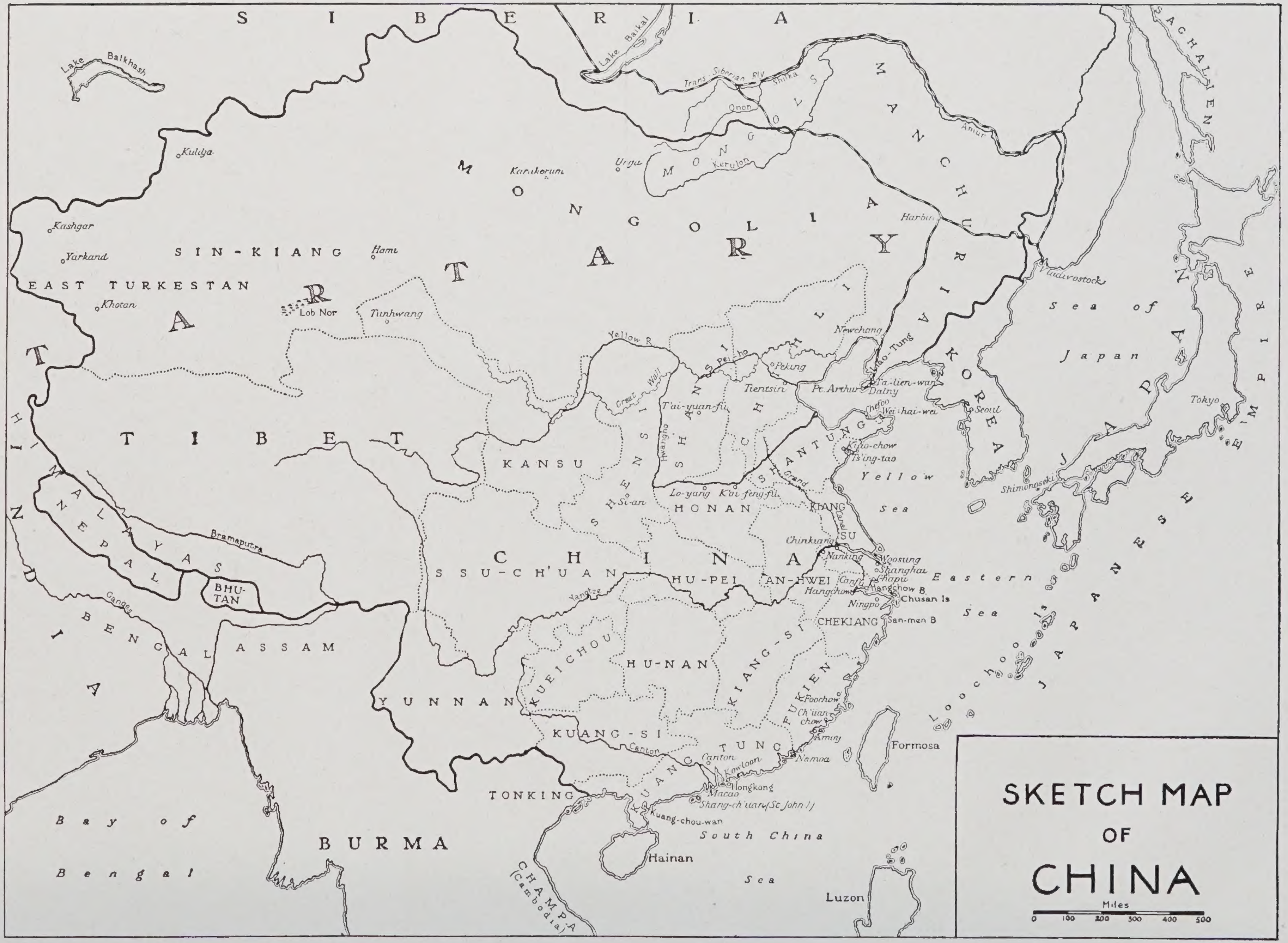
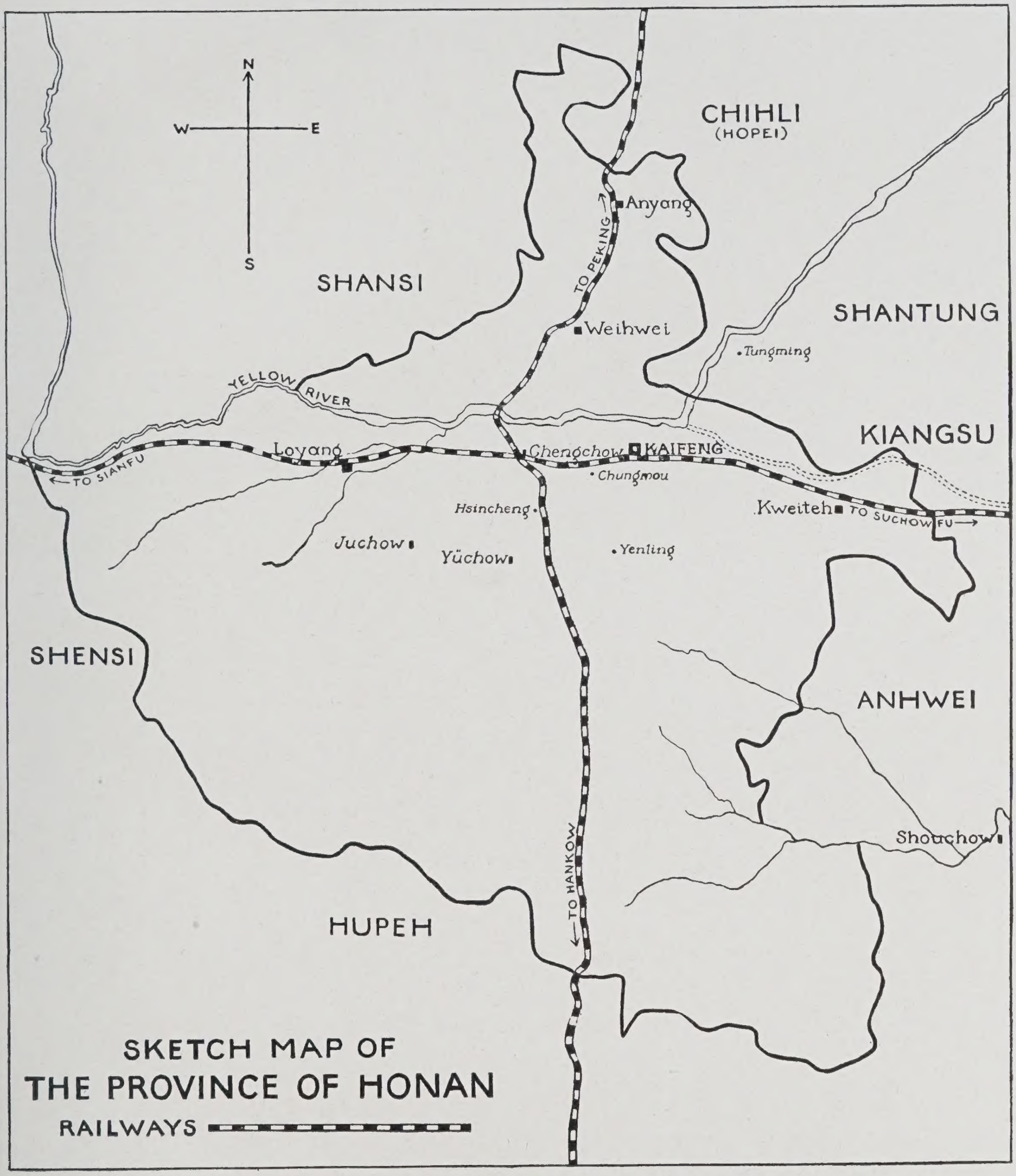

SKETCH MAP
OF
CHINA
Miles
0 100 200 300 400 500
SIBERIA
Lake Balkhash
Lake Baikal
Trans Siberian Rly
Shilka
Onon
Amur
SACHALIEN
MONGOLIA
MONGOLS
Kerulon
Urga
Karakorum
MANCHURIA
Harbin
Vladivostock
Kuldja
Kashgar
Yarkand
Khotan
SIN-KIANG
EAST TURKESTAN
Hami
Lob Nor
Tunhwang
TARTARY
TIBET
HIMALAYAS
NEPAL
BHU-TAN
Bramaputra
Ganges
BENGAL
ASSAM
INDIA
Bay of Bengal
BURMA
TONKING
CHAMPA (Cambodia)
Yellow R.
Great Wall
Hwangho
Pei-ho
Peking
Tientsin
CHIHLI
Newchang
Liao-Tung
Pt. Arthur
Ta-lien-wan
Dalny
Chefoo
Wei-hai-wei
KOREA
Seoul
SHANSI
T'ai-yuan-fu
SHANTUNG
Kiao-chow
Ts'ing-tao
Grand Canal
KANSU
SHENSI
Si-an
Lo-yang
K'ai-feng-fu
HONAN
KIANGSU
Chinkiang
Nanking
Woosung
Shanghai
Chapu
Canfu
Hangchow
Hangchow B.
Chusan Is
Ningpo
San-men B
CHEKIANG
CHINA
SSU-CH'UAN
HU-PEI
AN-HWEI
Yangtze
KUEICHOU
HU-NAN
KIANG-SI
FUKIEN
Foochow
Ch'üan chow
Amoy
Namoa
YUNNAN
KUANG-SI
KUANG TUNG
Canton
Canton
Kowloon
Hongkong
Macao
Shang-ch'uan (St John!)
Kuang-chou-wan
Hainan
South China Sea
Luzon
Formosa
Loochoo Is
Yellow Sea
Eastern Sea
Sea of Japan
Shimonoseki
Tokyo
JAPAN
JAPANESE EMPIRE

MAP A


N
W
E
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SHANSI
CHIHLI
(HOPEI)
SHANTUNG
KIANGSU
ANHWEI
SHENSI
HUPEH
YELLOW RIVER
Anyang
TO PEKING
Weihwei
Tungming
Loyang
TO SIANFU
Chengchow
KAIFENG
Chungmou
Hsincheng
Juchow
Yüchow
Yenling
Kweiteh
TO SUCHOWFU
Shouchow
TO HANKOW
SKETCH MAP OF
THE PROVINCE OF HONAN
RAILWAYS

MAP B

PART I

INTRODUCTION

INTRODUCTION

Chapter
- I. Early Life in Asia
- II. Myth, Legend and History
- III. Consulting the Tortoise
- IV. The Oracle Bones
- V. The Ceremonial Bones
- VI. Various Bone and Shell Objects
- VII. The Animal Style

I

EARLY LIFE IN ASIA

A CHINESE speaker, when addressing an audience of his fellow-countrymen, will sometimes use the phrase "brethren of the same mother" (*t'ung pao hsiung ti*), and in his mind and in that of his hearers, it would imply that inherent blood relationship and racial unity which the Chinese spontaneously accept regarding themselves. Time and space mean little to the fundamental spirit of the Chinese people. Their sense of immortality is backward to the ancients, for they come out of the past and reincarnate the past, and also forward to the future, where their "children's children and grandchildren's grandchildren" (*tzu chih tzu, sun chih sun*), will perpetuate their race and transmit whatever of their culture is worth while or desirable. The transient present is but an interlude in the long sweep of racial life and culture, which are both immortal, even if changeable.

Clans and families may have different names, but "Hundred Names" (*po hsing*) is the one all-inclusive term for the people of China. Which again testifies to an innate sense of racial solidarity, as does the present unity of China, despite the criticism of various dialects, of temperaments characteristic of North or South, and of family quarrels within the race. The fact is that continuity of race and culture of the Chinese people has proceeded through the years without a break since the dawn of their history, in contrast with that of most, if not all, other nations of ancient times.

It used to be said that authentic Chinese history began with the date 841 B.C., but recent discoveries of contemporaneous documents of the later Shang period (*c.* 1400-1123 B.C.), that is the inscribed bones known as the "Oracle Bones" of Honan, have provided authentic historical evidence dating from this earlier period. This Shang culture bursts into view as a highly developed and sophisticated civilization, which must have required a long period of development. Its habitat was the Yellow River valley, and particularly the area centring at the elbow of the Yellow River, where it turns sharply to flow eastwards to the sea. In this area, within a radius of some three hundred miles from Tung Kuan as the centre at the elbow of the river, are to be found most of the historical and cultural data so far known, of the China of ancient times.

Where did the early Chinese come from and what was the source of their civilization? Many have been the attempts to answer these questions. Most of the answers have favoured the immigration of the first Chinese from the west, while a few have surmised that the Chinese people have lived on the Asian mainland from highest antiquity. This latter theory seems now to be conclusively proved, though the probability of infiltrations of racial groups and cultural elements from outside must also be allowed, as well as the possibility of intermittent gaps in prehistoric times. The evidence for this conclusion lies mainly in the fields of palaeontology and prehistoric anthropology. The North China plain, through which the Yellow River flows, contains great areas of loess soil, which is generally believed to be of a windblown formation built up over long periods of time. This soil is very friable, and is yellow in colour, so that in flood times the rivers of this area become almost of pea-soup consistency; and from this the Yellow River gets its name. The term Yellow Earth (*huang t'u*) is a very old and honoured one, for this yellow loess soil nourished the ancestors of the Chinese from earliest days, and the Yellow Emperor, Huang Ti, was a mythological founder of their ancient polity and culture.

In early times the people lived in caves excavated in the loess cliffs, and even today tens of thousands of families live in such caves throughout the area of the Yellow River in Western Honan. These beds of wind-blown deposits, sometimes hundreds of feet in thickness, are ideal lodging places for the preservation of skeletal remains of animals which lived during the period of loess formation.

Recent discoveries by scientists have brought to light the fact that China is one of the richest fields of palaeontological deposits in the world. Dr. J. G. Andersson, formerly of the Geological

Survey of China, has revealed the fact that an abundance of skeletal remains of mammals of the Hipparion age of the Pliocene period have been found in the loess, with many forms among them new to science. There were three kinds of rhinoceri, and several kinds each of elephants, pigs, giraffes, and cats, while three kinds of sabre-toothed tigers were found which hitherto had been unknown. Among the remains were several forms of the three-toed horse, and in the early Pleistocene period there was a new horse form with a snout like that of a tapir. There were also deer and antelope, buffalo and camel, mole and beaver, hare and hedgehog, dog and bear, ape and hyena, and many other animals of the Pleistocene Age; all of which might well have roamed the loess steppes of Asia a half a million years ago. One large bird was the Giant Ostrich, *Struthiolithus*, which must have been very common, for its eggs and its skeletons are found everywhere through the loess. After a crumbling down of a loess bank an egg is oftentimes seen protruding from the side of the cliff, or floating in the water below.

The most important discovery of recent years was that which had to do with the proto-Chinese, in the finding of skeletal remains and associated evidences of sub-humans of the Pleistocene Age. Through a chain of activities initiated by Dr. Andersson,[3] two fossil teeth were found at Chou-k'ou-tien near Peking, which Dr. Davidson Black,[2] the brilliant Toronto scientist who was Professor of Anatomy of the Peking Union Medical College, pronounced to be those of an early hominid. A careful investigation of the locality was made, under the auspices of the Geological Survey of China, with Dr. V. K. Ting as Honorary Director, and Dr. Davidson Black responsible for the anatomical study of such skeletal data as might be obtained. The official direction on the spot was entrusted to the geologist Dr. Li Chi, who took responsibility for geological and topographical observations. Work was begun on the site in April, 1927, with such successful results that in the following October Dr. Black could announce the discovery of a new genus of sub-human which he called *Sinanthropus pekinensis*, and is popularly known as the "Peking Man." The following year Dr. W. C. Pei[4] took over the direction of the local excavations, and in the succeeding years considerable hominidae material was unearthed and studied. This "Peking Man" is now tentatively placed in the Pleistocene Age, possibly following *Pithecanthropus erectus*, or the "Java Man," and preceding in time the various types of the Neanderthal Man of Europe, and is generally accepted by scientists to be in the succession of ancestors of modern man. Dr. Franz Weidenreich,[7] who has carried on Dr. Black's research work since the latter's death, has now proved, from a wealth of material, that the "Peking Man" was more closely akin to the present Chinese and to some North American groups of peoples, such as Eskimo and certain North American Indians, than to the Neanderthal and other types of Europe.[8] Dr. Weidenreich's comparison of the average capacities of the brain pan of anthropoid apes and early types of sub-humans and modern man is as follows:[9]

Anthropoid Apes—Chimpanzee, Orang, Gorilla		500 cu. cm. (Average)
Sub-Human Types		
	Java Man	900 cu. cm.
	Peking Man	1,000 cu. cm.
	Neanderthal Man	1,425 cu. cm.
Modern Man	European	1,375 cu. cm.
	(Individual variation of	
	Mongolian	1,100-1,700 cu. cm.)
	Eskimo	1,500 cu. cm.
	Arkansas Indian	1,355 cu. cm.
	Chinese	1,434 cu. cm.

Dr. Weidenreich also points out various characteristics which are somewhat common to both *Sinanthropus pekinensis* and the modern Mongoloid. Of these he mentions two of the more striking characteristics as follows:

> *Sinanthropus* shows a real and curious specialization which has never been found in monkeys or apes. Two of the adult jaws bear irregular, roundish swellings of the bone substance restricted to the upper border of the inner side, especially in the region of the canine and first premolar. These thickenings have nothing to do with pathological alterations of the bone itself or of the teeth. They must be considered as quite normal formations, the significance of which is for the present a riddle. This peculiarity is completely absent in all Neanderthal jaws known up to date, but it is found in many representatives of the recent Mongol race (Furst, Hansen, Hrdlicka), in the same degree and in the same place. It occurs for instance in the Eskimo as high as 85% and

> in recent Chinese up to about 15%. Taking everything into account, there is but one explanation for this coincidence. *Sinanthropus* and the Mongols of today must have a direct relationship which can only be the case when *Sinanthropus* is a direct ancestor of that race and, therefore, also of mankind of today.
>
> This supposition is strengthened by another fact. All upper incisors of *Sinanthropus*, the medial and lateral ones, show the so-called shovel-shaped form (Hrdlicka) in a very pronounced degree. These shovel-shaped incisors are also very characteristic for the Mongol race in which they occur in some groups up to 100%.
>
> The existence of these morphological conformities is of the greatest importance. It proves that *Sinanthropus* ranges in the direct line of human evolution and leads the race history of the Mongol back to *Sinanthropus*. Of course, that does not mean that *Sinanthropus* itself was a Mongol in the same sense as we use this name today. But the fact that the peculiarity of the lower jaw has not been transmitted to the white or black race proves that the racial differences must have started in a very early stage of human evolution.[10]

Thus it appears that a type of sub-human, whose jaws and teeth show affinities with the present-day Mongolian or Mongoloid races, lived in China possibly a half a million years ago.

Since there is nothing to show a break in the continuity of life on the Asia continent, it must be assumed that racially the Chinese of today are the descendants of people who lived in China in a very remote age. We must also assume that much, if not most, of the culture of early China originated and developed on the Asian mainland. It seems necessary to emphasize these points in view of the fact that the Westerner is often too readily given to infer that any high standard of early Chinese culture must of necessity be due to the influence of the ancient cultures of the Near East or the Mediterranean.

Although life on the Asian continent has continued unbroken over a long period, it is remarkable that only a comparatively small quantity of palaeolithic material has yet been found, and this is of such a nature that no adequate picture of palaeolithic life can be formed with any feeling of certainty.[1] It seems inevitable that some day deposits of Chinese palaeolithic material must come to light which will in some measure fill the present great gap in our knowledge of prehistoric China.

Of neolithic material[6] there is more, but it is not yet of a character or quantity sufficient to allow of a synthesis of life in early China before the Shang Dynasty.

This material consists mainly of pottery vessels and objects,[12] but there are also implements and weapons of stone, jade and bone[3] (*Children of the Yellow Earth*, *chaps. 10-17*).

In some areas, particularly at Anyang in North Honan, this neolithic material is found intermingled with objects of an advanced bronze culture such as that of the Shang, and the assumption is that the Shang culture came from an outside area, and that the local indigenous neolithic culture continued to exist side by side with the more recently introduced superior culture of Shang.

The advent of the Bronze Age in China seems to have been considerably later than in other countries of Europe and Asia, and its beginnings are still wrapt in mystery. Iron does not appear to have come into use in China until late in the Chou period, possibly from the sixth or fifth century B.C. Bronze did not fully give way to iron until many centuries later, and iron swords still carried bronze hilts as late as the third century A.D. Gold and silver do not appear to have been used in the Shang Dynasty, though turquoise and lacquer are used as decorative inlays.

---

[1] Chardin and Pei, *The Lithic Industry of the Sinanthropus Deposits* (Geological Society of China, 1932).

[2] Davidson Black, *Fossil Man in China* (Geological Memoirs, Series A, no. 11, Geological Survey of China, Peiping, 1933).

[3] J. G. Andersson, *Children of the Yellow Earth* (London, 1934).

[4] W. C. Pei, *Preliminary Report on Chou-k'ou-tien* (Geological Society of China, 1934).

[5] C. C. Young, *New Vertebrate Horizons in China* (Bulletin of the Geological Society of China, vol. XVII, nos. 3 and 4; Nanking, 1937).

[6] W. C. Pei, *On the Upper Cave Industry* (Peking Natural History Bulletin, vol. XIII, part 3; March, 1939).

[7] F. Weidenreich, *Sinanthropus Pekinensis and Related Problems* (Bulletin of the Geological Survey of China, vol. XIX, no. 1; Chungking, 1939).

[8] F. Weidenreich, *On the Earliest Representatives of Modern Mankind* (Peking Natural History Bulletin, vol. XIII, part 3; March, 1939).

[9] F. Weidenreich, *Palaeontologia Sinica*, Series D, vol. VII, fasc. A, 1936.

[10] F. Weidenreich, *Sinanthropus Pekinensis and its Position in the Line of Human Evolution* (Peking Natural History Bulletin, vol. X, part 4; June, 1936).

[11] Bulletins of the Geological Society of China, 1932-9.

[12] G. D. Wu, *Prehistoric Pottery in China* (London, 1938).

II

MYTH, LEGEND, AND HISTORY

CHINESE mythology begins with the creation of the universe by a fabulous creature known as P'an-ku, who was the first man, though endowed with supernatural powers. Following him there are ten distinct epochs of sovereigns,[1] not all of equal importance, yet what is noteworthy in the records of these epochs is the fact that the alleged doings point to some sort of progress in civilization and culture. Numbers seem to play an important part in these fanciful epochs, and the period of time covered is stated to be some two or three million years. The first epoch is known as that of the Three Sovereigns or Imperial Families, that is the Emperors of Heaven—thirteen brothers, the Emperors of Earth—eleven brothers, the Emperors of Humankind—nine brothers. These three great facts—heaven, earth, man—have always formed the connecting thread of China's life and philosophy throughout her long history. The other nine epochs deal with the invention of the musical scale, the five planets, the breeding of the silk moth, and the setting up of beneficial institutions. There was the production of fire, the invention of the prehistoric knot-recording, the art of writing, and the formulation of the Ten Heavenly Stems and the Twelve Earthly Branches, to make the Cycle of Sixty; a system of chronological reckoning which is in use today. The above shows an arbitrary blending of cultural development, and the early Chinese writers themselves do not attach any actual weight to the statements.

It is convenient, nevertheless, for chronological purposes, to accept the tenth epoch as legendary rather than pure myth, and this is the practice followed by early writers, such as the historian Ssu-ma Ch'ien for instance (145-*c.* 80 B.C.). The first three rulers of this epoch are Fu Hsi, arbitrarily stated as succeeding to the throne in 2852 B.C., Shen Nung, 2738 B.C., and Huang Ti or the

Yellow Emperor, 2697 B.C. The first, Fu Hsi, is credited with being the founder of the Chinese polity, and the originator of time-honoured social institutions and cultural inventions. On stone sculptures of the Wu Liang Tz'u in Shantung, dated A.D. 149 and still extant, he is depicted carrying a carpenter's square, with his consort Nu Wa holding a pair of old-style compasses. The second, Shen Nung, is literally the "Divine Farmer." He invented agricultural implements, and introduced field labour. He discovered the medical properties of herbs, and so is worshipped by the medical profession. The third, Huang Ti, the Yellow Emperor, is the great promoter of culture in general. He was law-giver, engineer, and conqueror. He regulated the sacrifices and religious ceremonies of his people, and opened up the mysteries of astronomy and of the works of nature. It was he who raised his nation from barbarism by introducing matrimony, the calendar, the pursuits of the chase, and endless cultural institutions. These three legendary rulers are accepted by the Chinese people as symbols of the great and ancient culture of China. Until recently nearly every town in China used to have a favourite temple called the Temple of the Three Emperors, *San Huang Miao*, and there could be seen figures of these three divinities, of huge size, usually seated together on a dais. Fu Hsi would be in the centre, black-complexioned, and clothed with rough garments made of large leaves. On his left side would be Shen Nung, red-complexioned, clothed in animal skins; and on the other side, there would be Huang Ti, the Yellow Emperor, yellow of countenance, and clothed with gorgeous robes obviously made of silk.

There were other rulers of this epoch following these three, the most important of which were the great rulers Yao, *c.*2356 B.C., and Shun, *c.*2255 B.C., who was son-in-law to the former. The Book of History, *Shu Ching*, gives considerable space to the history of these two rulers, all of which must be considered legendary, though much might be tradition, and future archaeological discoveries may even provide us with authenticating data. The given dates in every case are probably not correct, and follow the orthodox dating used tentatively for the sake of convenience.

Following these epochs is a division of Chinese chronology known as the San Tai, or Three Periods. The Three Periods are the Hsia (*c.*2205-*c.*1766 B.C.), the Shang (*c.*1766-1123 B.C.), and the Chou (including Ch'in) (1122-206 B.C.).

The Hsia and Shang periods used to be considered legendary, the first part of the Chou period as semi-historical, and only the remainder, from the ninth century B.C., was reckoned as historical. Recent discoveries of inscribed bones at Anyang, the site of the capital of Shang Two, *c.*1400-1123 B.C., have provided contemporary documentary evidence, which now brings within the category of semi-historical, and in parts even historical, that period which reaches back to about 1400 B.C. Some day probably there will be further material excavated, which will corroborate the detailed record given in the Book of History about the Great Yü (*c.*2205 B.C.), the founder of the Hsia Dynasty, and Ch'eng T'ang the first king of Shang (*c.*1766 B.C.), a good and virtuous ruler, full of benevolence towards his human subjects, and kind to animals, and many others of the ancient kings and worthies.

A large quantity of literature dealing with the legendary and semi-historical periods of early Chinese history was gradually compiled from earliest days, and it was inevitable that accretions and forgeries should also be included with the authentic records, and that much confusion should result from this. In every age of Chinese literature there have been independently minded scholars who tried to unravel the contradictions, but it was reserved to scholars of the present day to bring to bear upon the problems of the early Chinese records a scientific method of criticism in conjunction with Chinese scholarship. There is now a feeling that we are standing on firmer ground in regard to literary source material of early Chinese history. After an excessive destructive criticism of all the early classical writings, there is now a more reasoned and balanced judgment as to their respective authenticities. The following is a list of writings of the B.C. period dealing with early history and chronology which are those now usually accepted as being on the whole authentic, though revised and added to in parts.

1. The Book of History—*Shu Ching*.

The *Shu Ching* records details of the rulers of Hsia, Shang, and Chou from the time of Shun and Yao, and were probably the works of the periods dealt with, except in certain chapters which by their clarity might have been re-edited later.

2. The Book of Odes—*Shih Ching*.

These odes were productions from about the eleventh century to the sixth century B.C. The five Sacrificial Odes of Shang, which were generally taken to be of Shang times, are now thought to be of the Chou period, yet nevertheless they probably incorporated much Shang material.

3. The Book of Changes—*Yi Ching*.

Of this book the sections Kua Tzu and Yao Tzu are considered to be of the early Chou period, but most of the remainder may have been either the work of Confucius himself, or the sayings of his disciples. The book originally was a divination system based on broken and unbroken lines of trigram symbols.

4. The Spring and Autumn Annals—*Ch'un Ch'iu*.

These were the history of the State of Lu, from 722 to 481 B.C., and are said to have been revised and edited by Confucius.

There are three well-known commentaries on these annals, the one best known being that of Tso-ch'iu Ming, supposed to have been a disciple of Confucius, and the author of the *Kuo-yü*. This commentary, known as the *Tso-chuan*, was produced in the fourth century B.C. and became known to the public at the beginning of the Han Dynasty.

The above four books, including the Tso commentary, were accepted by the modern scholar Wang Kuo-wei as essentially reliable in matter of content.

In addition to the above there are other books dealing with varied subjects, such as ceremonies, sayings, government, philosophy, and morals, most of which are from the fifth century to the second century B.C.

The most important of these are:

The Confucian Analects.
The Book of Mencius.
The Great Learning.
The Doctrine of the Mean.

These constitute what are known as the *Ssu Shu* or Four Books.

The *Erh Ya*, a classical dictionary.
The Book of Ritual—*Yi Li*, with which may be connected the Chou Ritual—*Chou Li*, and the Record of Rites—*Li Chi*. These three form the *San Li* or Three Rituals.
The *Kuo Yü* speeches concerning the States.
The Book of Filial Piety—*Hsiao Ching*.
The teachings of Mo-ti or Mo Tzu.
Hsün Tzu.
Han Fei Tzu.
The texts of Taoism, including Chuang Tzu.

The Historical Memoirs, *Shih Chi*, of Ssu-ma Ch'ien (145 B.C.-*c.*80 B.C.) bring together much information on early Chinese myths, legends, and history, and the section on chronological tables of that work crystallized an orthodox chronology which has been accepted up to the present day.

Another chronology is that of the Annals of the Bamboo Books. Historically these annals were written on bamboo slips found in A.D. 281 in a tomb which was identified as belonging to the end of the Wei State in 296 B.C. These in general agree with the chronology of Ssu-ma Ch'ien in the Historical Memoirs.

A similar record is the Genealogical Origins, *Shih Pen*, now lost, but largely reconstructed from early quotations, which covered lists of rulers from the Yellow Emperor down to about 481 B.C. It has been asserted that Ssu-ma Ch'ien used this work in compiling his chronology given in the Memoirs, but if so he does not mention it.

The inscribed oracle bones of Honan, found at Anyang on a site of the capital of the Shang Two period (*c.* 1395-1123 B.C.), have confirmed in a remarkable way the orthodox chronology lists. It is true that these bone inscriptions do not give dates or lengths of the reigns of the Shang kings, but they do give the names and order of the kings of the Shang Two period, and other genealogical matter, which agree in the main with that of the traditional and other chronological lists.

In addition the inscribed bones give promise of further and more important information bearing on chronology. One of the most interesting discoveries is that put forth by Tung Tso-pin. From the inscriptions on two different pieces of bone, he has deduced a record of a lunar eclipse on a *keng shen* day, which would be the fifteenth day of the twelfth moon of the twenty-ninth year of King Wu Ting, and would correspond to November 23, 1311 B.C., of our western calendar.

On this basis Tung Tso-pin[3] gives the following chronological list of the later Shang kings (*c.*1400-1123 B.C.) in which period must be placed for the present all the inscribed bones obtained in the Anyang area. The period of Shang One according to the traditional chronology, covers nine generations and nineteen kings in sequence. It should be noted that P'an Keng moved the court to Yin in the fourteenth year of his reign which would be *c.*1395 B.C. but he began his reign *c.*1409 B.C. and occupied the throne for twenty-eight years, until 1382 B.C.

CHRONOLOGICAL LIST OF KINGS

Period of Shang Two, c. 1395 - 1123 B.C.

Generation	*Number*	*Reign name*	*Dates*	*Length of reign*	*Relationship*	*Orthodox accession list*
X.......	20	P'an Keng	*c.* 1395-1382 B.C.	(28) 14	Son of 17	1401 B.C.
X.......	21	Hsiao Hsin	1381-1361	21	Son of 17	1373
X.......	22	Hsiao Yi	1360-1340	21	Son of 17	1352
XI......	23	Wu Ting	1339-1281	59	Son of 22	1324
XII......	24	Tsu Keng	1280-1274	7	Son of 23	1265
XII......	25	Tsu Chia	1273-1241	33	Son of 23	1258
XIII.....	26	Lin Hsin	1240-1235	6	Son of 25	1225
XIII.....	27	K'ang Ting	1234-1227	8	Son of 25	1219
XIV.....	28	Wu Yi	1226-1223	4	Son of 27	1198
XV......	29	Wen Ting	1222-1210	13	Son of 28	1194
XVI.....	30	Ti Yi	1209-1175	35	Son of 29	1191
XVII....	31	Ti Hsin	1174-1123	52	Son of 30	1154

Of the above names all are found on the inscribed bones but number 26, Lin Hsin, and 30-31, Ti Yi and Ti Hsin. Although Lin Hsin is not found on the bones yet *hsiung*, "Elder-brother," takes its place, and is doubtless the term used in the sacrifices by his younger brother K'ang Ting, who succeeded him. It has been stated that Ti Yi was not found on the bones because he was not given a temple title while his son Ti Hsin was alive, who would be required to designate him in the sacrifices with the title "Father" —*Fu.* The dynasty was brought to an end in Ti Hsin's reign, so neither name of these two last kings is found in the bone inscriptions though they are included in the chronological lists. The appellation *Ti*—Emperor—in both names seems to have been inserted after Ch'in Shih Huang Ti's time, by the historians who prepared the chronologies. Ti Hsin is simply called *wang*—king—on the oracle bones (*Pl.* xv). He is also known in the chronologies as Shou Hsin, and by the derogatory name Chou Hsin, which was applied to him by the Chou historians.

Doubtless future excavations will reveal similar contemporaneous inscriptions, giving authentic evidence confirming the other earlier lists of the rulers of Hsia and Shang One, which precede the above kings of Shang Two, but which are recorded in the traditional and other early chronologies. In these chronologies the names of seventeen kings of Hsia (*c.*2205-*c.*1766 B.C.) are given; and also the names of the kings of Shang One (*c.*1766-*c.*1396 B.C.), nineteen in all.

There is so far nothing of archaeological material that can definitely be ascribed to these two earlier periods, and certainly nothing in the line of authentic script. Probably some of the material, such as neolithic and painted pottery culture remains, may ante-date 1396 B.C., but there is as yet no proof of this. The civilization of Shang Two (*c.*1395-1123 B.C.) as seen in the high quality of its artifacts, and the standard of culture revealed in its inscribed bone records, must have required a long period of development, but the evidence at hand will only allow us to accept bases for its historical culture as from the end of Shang One, because it was during the rule of P'an Keng, in the fourteenth year of his reign, that the capital was moved from its old site of Yen, probably in Shantung, to the new location at Yin near the present-day city of Anyang, North Honan. Though the city or district was later called Yin, or the Waste of Yin, the inscribed bones never use the character for Yin, but Shang or Shang Yi.

The period of Shang Two dates from this removal of the court, so that P'an Keng was the last ruler of Shang One and the first of Shang Two. The court would doubtless bring archives from the old capital, and some of the inscribed bones still waiting to be read, may ultimately be revealed as belonging to the earlier period of Shang One.

It should be borne in mind that an absolute chronology of Shang and early Chou is still to be verified, but the tentative chronology as outlined by Tung Tso-pin seems the most reasonable at present, and his datings are used in this study.[3]

[1] W. F. Mayers, *Chinese Reader's Manual* (Shanghai, 1924).

[2] H. G. Creel, *Studies in Early Chinese Culture* (Baltimore, 1937).

[3] Tung Tso-pin, *Contributions to the Study of Oracle Bone* (Quarterly Bulletin of Chinese Bibliography, vol. II, no. 3; Yunnan, 1940). *Chronology of the Yin Dynasty* (4 vols. Chinese; Chungking, 1945).

III

CONSULTING THE TORTOISE

IN the Books of Shang of the Book of History, there are three chapters on P'an Keng, the king during whose reign the court was moved to Yin, which are now generally accepted by the critics as authentic, although probably compiled in early Chou period. In view of the now known locality of the new capital, and the knowledge of the culture of that time gathered from the inscribed oracle bones and associated material excavated on the site of Yin, the record of the moving of the court takes on a deeper interest. Why the king considered it necessary to move the court is not clear, but knowing the vicissitudes of famine, following flood and drought, which so frequently fall on the areas of the North China plain, it can be surmised that the need was an economic one. The statements in the addresses of the king to his people bear this out. As the Book of History says:

> P'an Keng wished to remove to Yin, but the people would not go to dwell there. He therefore appealed to all the discontented, and made the following protestations. He said, "Our king came, and fixed on this settlement. He did so from a deep concern for our people, and not because he would have them all die, where they cannot now help each other to preserve their lives. I have examined the matter by divination, and obtained the reply—'This is no place for us.' "
>
> P'an Keng arose, and crossed the river with the people, moving them to the new capital. But some of the people were still dissatisfied, so they were called together in the royal hall, and the king addressed them. He told them they were in danger of destruction by remaining on in the old district, and as the one man responsible for their lives, he was determined to save them. "My measures are forecast to prolong your lease of life from Heaven, . . . my object is to support and nourish you all."
>
> P'an Keng having completed the removal, and settled the places of residence, proceeded to adjust their several positions, and then he soothed and comforted the multitudes, saying to them, "Do not play or be idle, but exert yourselves to build here a great destiny for us. You asked why I was troubling your myriads by removing you here. But God being about to

> restore the virtue of my High Ancestor, and secure the good government of our empire, I have made a lasting settlement in this new city. I, a youth, did not slight your plans,—I only used what were the best of them. And you did not presumptuously oppose the decision of the tortoise (in the divination), so we are here to enlarge our great inheritance."

In the Book of History frequent reference is made to consulting the tortoise.

> Let us reverently consult the tortoise concerning the king.
> I will now seek your orders from the great tortoise.
> The duke then divined with the three tortoises, and all were favourable!

In the Book of Odes there is also occasional mention of consulting the tortoise and the milfoil (*Odes 50, 58, 169, 244*), and one reference definitely speaks of singeing or scorching the tortoise, which is obviously related to the burnt spots of the oracle bones (*Ode 237*).

Although Chinese literature had frequently mentioned the ancient practice of consulting the tortoise in divination, and the "scorching" of the bone, yet the technique had become lost to knowledge. It was only recently when original oracle bones were found and examined that the method of casting the oracle became known. It was not the live tortoise, but the shell of a dead one that was consulted. This fact, though known and recorded by the ancients, seems not to have been fully grasped by the scholars. Ou-yang Hsiu (A.D. 1007-1072) in his "Discussion on the Eccentricities of the Bamboo," refers to the "understanding" of the tortoise shell.

He says:

> From ancient times to the present, great sages and wise men, in matters they did not understand, always consulted the milfoil and the tortoise, and then made their decision. Thus it is that dry grass and dead bone have understanding surpassing the intelligence of the sages and wise men. Men and animals when living have understanding, but when dead they have no understanding; but milfoil and tortoise when alive have no understanding, yet when they are dead they have understanding!

From this one might gather that the practices continued for more than two thousand years. If so it is difficult to understand why so little has been known in particular about these divination practices and techniques up to the present time.

The legend associated with Chuang Tzu (*fl.* 300 B.C.) is also well known. The Prince of Ch'u having sent two officials to urge him to return to court and take office as a high adviser, they found him sitting on the bank of the River Wei placidly fishing. Continuing his fishing he quietly listened to their arguments, and then he replied, "I have heard that in Ch'u there is a sacred tortoise which has been dead now for some three thousand years; and that the Prince of Ch'u keeps this tortoise carefully enclosed in a chest on the altar of his ancestral temple. Now would this tortoise rather be dead and have its remains venerated, or be alive and wagging its tail in the mud?" "It would rather be alive," said the officials, "and wagging its tail in the mud." "Begone!" cried Chuang Tzu, "I too will wag my tail in the mud."

The site of the new capital was on the Huan River in what is now the northern part of the Province of Honan, in the department formerly known as Chang-te, and about a mile north-west of the city of Chang-te, which is also known by its district name of Anyang (Lat. 36°07^1, Long. 114°30^1). The discovery of this site reads like a romance. In 1899 fragments of inscribed bone had been found somewhere in Honan which were taken to Peking for disposal. But 1900, the Boxer year, was a bad year for business, so they were removed to Wei Hsien in Shantung, and ultimately purchased by F. H. Chalfant, S. Couling, and Lionel C. Hopkins in 1903. Later it transpired that these bones had been obtained from the village of Hsiao-t'un, near Anyang. Their introduction to scholars is generally attributed to Wang Yi-jung, a Grand Secretary of the court at Peking, who in purchasing "dragon-bones" from a medicine shop had recognized incised writing on the bones, and became interested in their archaic forms. He had purchased a quantity of these bones, and doubtless would have been the earliest scholar to have given them publicity, were it not for his untimely death by suicide when the foreign troops entered Peking in 1900. His collection was sold by his son to Liu T'ieh-yün, who added to it until he had brought together some five thousand pieces. In 1903 he published a book containing reproductions of a selection of a thousand pieces, which was the first announcement to the general public of the existence of these inscribed bones of a very early period. The following year Sun Yi-jang made public the first attempt to transcribe and interpret the inscriptions. Since then the collections of inscribed bones have increased to a very large aggregate quantity of fragments. Research work on their meaning and implications, still proceeding with unabated intensity, is producing a mass of authentic evidence, throwing light on the life and age and chronology of the later Shang period.

Although the bones were known to have come from the Hsiao-t'un locality, no scientific excavations had been made, although, of course, the local villagers were aware of the finds. It was not until the Reverend J. M. Menzies, a missionary, who for many years had lived in the vicinity of the village, in 1914 actually found fragments of the inscribed bones on the surface of the soil, that the site was definitely located, and the scientific public informed, by a publication of reproductions of 2,369 fragments issued by him in 1917. In the same year of 1914, Lo Chen-yü visited the site and published an account of his finds. It was not until 1928 that the first systematic exploration of the site was undertaken under official direction and these excavations were continued until the outbreak of the war with Japan in 1937, but with many interruptions due to the prevalent unrest during the decade.

It is always helpful in trying to fix the setting of an unfamiliar period, to try to realize what historical events took place in other parts of the world at the same time. When the Shang Dynasty existed in China, in Western Europe Carthage (800 B.C.) had not yet been founded nor was Rome built (753 B.C.). In the Eastern Mediterranean, Knossos was at its zenith, and the *Iliad* was probably being sung by Homer in the Greek Heroic Period. In Egypt, it was the age of the Amarna Letters, of Rameses II, the Pharaoh of the Exodus, and of Tutankhamen.

The sojourn in Egypt, the conquest of Canaan, the rise of the monarchy, and the arrival of the Philistines in Palestine, all come within the limits of Shang Two period.

In Mesopotamia, the Hittites captured Nineveh in 1450 B.C. just before P'an Keng moved his court to Yin; Tigleth Pileser I took Babylon in 1100 B.C., about the time that King Wu of Chou overthrew the last king of the Shangs; while in India it was the age of the Aryan invasion.

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[1] S. Couling, *The Oracle Bones from Honan* (Journal of the North China Branch of the Royal Asiatic Society, vol. XLV; Shanghai, 1914).

[2] H. G. Creel, *The Birth of China* (London, 1936); *Studies in Early Chinese Culture* (Baltimore, 1937).

[3] J. M. Menzies, *Oracle Records from the Waste of Yin* (Shanghai, 1917).

[4] Academia Sinica, *Preliminary Report of Excavations at Anyang* (Peking, 1929-31).

[5] W. P. Yetts, *An-yang: A Retrospect* (London, 1942).

IV

THE ORACLE BONES

THE great quantity and remarkable variety of bone objects excavated at the Waste of Yin reveal a bone culture of the Shang Dynasty which is perhaps unique in the history of cultures of pre-Christian times. There must be now, in the collections of China and the rest of the world, some tens of thousands of fragments of bone and tortoise shell obtained from this site of the last Shang capital which have incised on them inscriptions recording contemporary events and affairs of life in the later Shang period. In addition, a great many carved bone and ivory objects have been obtained, including ceremonial sceptre-like objects, fragments of carved bone vessels, mace-heads, beads and ornaments, hair-pins and awls, fish-hooks and arrow-points and horse-trappings. Akin to these bone objects are similar ones made of mother-of-pearl.

By far the most important group of these bone objects is that of the inscribed bones. They are known as the "Oracle Bones of Honan" because most of them are records of divination. The village of Hsiao-t'un, on the south bank of a bend of the Huan River in North Honan, is the site whence most of the oracle bones come, but a few fragments have also been obtained from near-by places, yet all within the locality known as the Waste of Yin. So far, the inscribed bones seem to be limited to affairs under the control of the court. The bones used for the purpose are mostly the plastron or under half of the tortoise shell, and scapulae of animals. A small number have been ribs of animals, and stag horns, and some fragments of what are probably skull-pans of humans or animals, while occasionally a piece of inscribed carapace or upper shell of the tortoise has been found. Inscriptions on ivory should not be ruled out, for ivory was carved in a decorative way, but no data are yet available to corroborate this. It must be assumed that the tortoise plastron was the most desired medium for the divinations, as early Chinese literature contains references to many traditional and historical occasions when the tortoise was consulted; but there seems to be no reference to the consulting of scapulae or other bone. From the great quantity of shell and scapula fragments it would appear that the amount of tortoise shell required was insufficient for divination needs, and so scapulae were found to be a very good substitute. On the other hand, some scholars maintain that the use of tortoise shell evolved from scapulimancy, which prevailed in prehistoric China, and point to the fact that in the remains of Yin Hsü more scapulae have been found than tortoise shell. However that may be, the wide flat surface of the scapula made it a good writing tablet. The removal of the protruding under-ridge, and the sawing off longitudinally of half of the socket end of the bone, which was the usual pre-divination preparation, made it suitable for the diviner's use, and also convenient for stacking in the archives. The ends of these scapulae sometimes had numerals or other signs incised on them, which point to some sort of an index system having been used. In the plastrons also a similar thing has been noticed, where certain marks have been sawn or cut on one of the corners, and also the fact that they have been found stacked layer upon layer. Owing to long burial the tortoise shells, in particular, are usually found broken up into small fragments, while the scapulae are very brittle.

The technique of preparing the tortoise plastron for divination was to cut lentoid-shaped cavities, from a half an inch to an inch in length, on the inner side of the shell, in orderly rows. Heat was applied to the cavity, probably in the form of a red-hot metal rod, which caused cracks to form on the surface of the shell opposite the cavities. These cracks always took the form of one long crack corresponding to the alignment of the lentoid cavity, and one or more shorter lateral cracks branching from it. The character for divination in this case is *pu*, which took its origin from the divination cracks, and the form of the character even today in modern Chinese is a vertical line with a shorter lateral branching from it. It is assumed that from the character of the cracks the diviner would gather the oracular response, and this would then be incised on the surface by the side of the respective clump of cracks. The day date in cyclical enumeration would invariably be given: sometimes month dates were mentioned, while a royal anniversary would be designated when the number of the "Supplemental Sacrifice" was given. The inscriptions are usually brief and separated from each other by dividing lines or by numerical designations. Oftentimes there appears to be an orderly arrangement of the cavities and the inscriptions, the latter being numbered from the lower end of the shell, and gradually ascending to the last one at the top. The individual inscription, on the other hand, follows that of present-day Chinese, by reading the characters from the top downward, though some may begin from the right-hand column while others may read from the left. At the bottom of some inscriptions has been noticed a separate character, which some Shang-script scholars have now concluded to be the name of the diviner, and which would thus be his signature.

In the scapula the method is the same as that used for the plastron, the smooth flat surface being that used for cracks and inscriptions, and the inner surface being used for the cavities. The inscriptions on the scapula usually are cut first at the fan-shaped end of the bone, gradually being added upwards toward the socket end. The cavities and the scorching are similar in both plastron and scapula. Sometimes the cavities are not cut but bored, and thus would be round; and there are bone fragments showing the round boring having been added above the lentoid cavity, thus the one cavity would be both cut and bored.

Inscribed deer-horn and inscribed ribs with turquoise inlay, as far as are known, have not had cavities cut in them, nor are they scorched, while the inscriptions are of the character of historical records, rather than those of wishes or divinations, such as are common to the oracle bones generally.

The period of Shang Two (*c.* 1395-1123 B.C.) covers about 273 years, and the time range of the inscribed bones is that of this period. Since the names of practically all the rulers of this period are found in the inscriptions, it is possible to group into their respective time periods a great number of the inscriptions. For instance, the use of certain titles for the kings enables the bones to be placed in one or other of at least three generations of respective kings. When the bones record that a certain king is sacrificed to as "father" (*fu*) or as "grandfather" (*tsu*) with the respective cyclical name attached to it, or as "elder-brother" (*hsiung*), then the generation relationship can readily be established.

In the *Studies presented to Ts'ai Yuan-p'ei*, vol. I (*Peiping, 1933*) Tung Tso-pin made a valuable contribution concerning principles to be borne in mind in the study of the oracle bone records. It was shown that inscriptions were datable within limits, that names of the diviners were oftentimes subscribed to the writings, and that the script or writing of these diviners preserved their respective styles.

Tung grouped the various inscriptions into five periods, on the ground of content and style of script, in the following sequence:

1. Period of Wu Ting and earlier (1395-1281 B.C.)
   (P'an Keng, Hsiao Hsin, Hsiao Yi, Wu Ting).
2. Period of Tsu Keng and Tsu Chia (1280-1241 B.C.)
3. Period of Lin Hsin and K'ang Ting (1240-1227 B.C.).
4. Period of Wu Yi and Wen Ting (1226-1210 B.C.).
5. Period of Ti Yi and Ti Hsin (1209-1123 B.C.).

It should be stated that most, if not all, of the script of Period 1 falls in the fifty-nine-year reign of Wu Ting (1339-1281 B.C.). The inscriptions, by these groupings, reveal changes in the style of the script through development from the beginning in the writing period to the end of the Shang. Some characters which were entirely pictorial become conventionalized, and through the years many have gone through various changes. This may be seen by the lists drawn up by scholars working on the script, which reveal a great range of forms for most of the characters.

Yet the inscriptions of Shang are not crude and undeveloped, but of high standard, which is seen by the fact that every important principle used in the formation of modern Chinese script is found to have been in use in the script of Shang. Furthermore it is very evident that Chinese script was not borrowed from the West, even in its earliest form, and that it is indigenous to China. There have been attempts to link early Chinese forms with the forms of early Western script, but the more the bone script is explored, the more groundless this theory appears.

Some inscriptions of the bones are cut in quite large characters, and many have red ochre or a black pigment rubbed in the script, causing the writing to stand out more clearly. Many of the later inscriptions are very finely cut in a particularly small script; and some of the later inscriptions, which are deeply cut on rib bones, are inlaid with turquoise—both the inscription, which is on one side of the bone, and the carved decoration, which is on the other surface. One of these inlaid inscriptions now in the Royal Ontario Museum (*Pl.* xv), though not yet fully understood, states that the king, presumably the last king of Shang, on the *hsin-yu* day went hunting in the foothills of the Cock (*chi*) Mountain and "obtained," that is, he was successful in the chase. Then at a stated place, the name of which is not clear, in the tenth moon, the third Supplemental Sacrifice was offered. This Supplemental Sacrifice (*ssu*) is a yearly one, and thus the third year of the ruling king is designated, which would be about fifty years previous to his overthrow by Chou in 1123 B.C., that is, *c.* 1172 B.C. according to the traditional chronology. It is also worth noting in connection with the hunting expedition on the slopes of the Cock Mountain, that in the mountain range in the southern part of Honan there is a mountain called the Cock Mountain (*chi kung shan*), due to the peculiar cock-like crest of one of the rocky points. The hillsides of this range are still well stocked with game. This Cock Mountain is now noted as a summer resort for Westerners and well-to-do Chinese.

At least four other inscriptions of this kind are extant, one of which records the second Supplemental Sacrifice, two record the sixth, and one other records the tenth Sacrifice (*ssu*).

Although the ordinary inscriptions are incised on the surface of the bone, their form would suggest that they might have been written first with a fine brush and then carved; and actually a few pieces of bone have been found with inscriptions written by brush; while other specimens show the characters only partly cut, as if the carver had been in a hurry and so cut but a few strokes of each character, in abbreviated form as it were, yet sufficient to show what characters were meant. The problem not yet solved is the knives or implements by which the script was cut. Some say jade knives, others bronze, but it is doubtful if any cutting instrument which has yet come to light could have cut the fine-lined small characters of many of the inscriptions. One suggestion put forth is that rodents' teeth, of mice or squirrel or rat, would be suitable for this work, which is a plausible theory, especially as this method is known to have been used by primitive peoples for fine carving. It has been pointed out that the incisions of the script seem to point to two forms of instrument, a knife and a burin; but until such instruments are actually found this surmise can only be accepted as a possibility. As to brush writing on the bone, this makes it necessary to revise the accepted historical statement that brush writing was invented in the third century B.C. Probably a particular kind of fine hair brush was invented then, more suited for the character forms and writing materials of that time, and the record of this has been taken to mean that brush writing began then—which obviously is not the case.

Apart from brush writing on bone in Shang times, fragments of pottery have been found showing the same technique, and also white marble strips now in the Royal Ontario Museum have brush characters written on them in red, giving instructions as to placing of the strips.

[1] H. G. Creel, *The Birth of China* (London, 1936); *Studies in Early Chinese Culture* (Baltimore, 1937).

[2] Tung Tso-pin, *Criteria on the Oracle Bones* (Studies Presented to Ts'ai Yuan-p'ei, Part I, Academia Sinica, Peiping, 1933); *Contributions to the Study of Oracle Bones* (Quarterly Bulletin of Chinese Bibliography, vol. II, no. 3, Yunnan; September, 1940).

[3] Academia Sinica, *Catalogue of Archaeological Material* (International Exhibition of Chinese Art in London, vol. IV; Shanghai, 1935).

V

THE CEREMONIAL BONES

FROM the sacrificial and ceremonial objects found on the capital site of Yin, it must be recognized that the Shang people were strongly given to religious practices. Their ceremonial vessels were many and varied, and made of different materials such as bronze, bone, pottery, jade, and stone. By their inscriptions, many of the vessels are shown to have been used in ancestor worship, while references to sacrifices and pictographs of ceremonial vessels found on the inscribed bone (*Illus. 2*), as well as the ancient records of ceremonial practices given in the early rituals,[1] all go to show that the Shang had a well-regulated system of ritual sacrifice and ceremony. This was even continued into the succeeding Dynasty of Chou, for six hundred years after the fall of Shang it is on record that Confucius himself preferred the ceremonial of Yin, which is probably that which was practised in the Shang period.

From the inscribed bones it is gathered that ancestor-worship was a great factor in Shang ceremonial practices. The ancestors in the spirit world were venerated and sacrificial offerings were made to them. In that unseen universe they were with and under the Great Spirit, the *Ti*, and so this Supreme Being also was recognized in the rites. The early character *Ti* found on the bones is that of a bundle of faggots tied together, under a horizontal line or two lines, which represented "above," that is, "supreme," and the significance is taken to be that of a burnt offering to the One Above, or the Supreme Being, the character being used to designate God Himself as well as the sacrifice to God (*Illus. 2: H8*). The spirits of the departed ancestors were with God, and they were assessors for their descendants living upon the earth, or as messengers and mediators between God and men. So the rulers and people of Shang held their ceremonial gatherings, partaking with the spirits of their ancestors in the regular sacrifices, and addressing their petitions to the Great Spirit through respective designated ancestors. They did not necessarily ask the ancestor to send rain, or to give a full harvest, or to bestow blessing, but rather that he should ask God to do so, for the benefit of his blood relations on earth. Their real sense of a life beyond the grave is very evident in the inscriptions on the oracle bones, and it also suggests why there should be such a large number and variety of sacrificial vessels extant, most of which had been deposited in tombs at burials.

Some of the vessels and other objects made of bone must have been used in ancestor worship and be considered as connected with religious ceremonial. Others again must have been ceremonial objects connected with court observances, or associated with social institutions such as betrothals, weddings, home anniversaries, and seasonal festivities. These groups of objects do not bear inscriptions as a rule, so that it is difficult to know which ceremonial group the objects might have belonged to. In general, they may be classed in eight groups, of which several groups are variations of flattened objects with spatulate ends, shaped somewhat like shoe-horns.

I. Plain spatulas.

There are three varieties of this type, but none is decorated. One kind is short, wide, and thin (*Pl.* XXV), another is longer and very slender (*Pl.* XLII), and a third is not wide, but is rather thick, with one side round and the other side flat (*Pl.* LVIII). Apparently as far as is known no inscription of any kind has been found on the plain spatulas, but all seem to have the thickened ridge cut in relief along the side of the reverse surface at the thickened end of the object, the other end being smooth on both sides and tapering to a thin wedge-like edge, making them look remarkably like shoe-horns. They probably take their form from a scapula, being a stylization to the regular form of that bone, which was so generally used in divination, and thus might be connected with religious ritual (*Pl.* I). They might have been used as writing tablets, though none with writing is yet known; or they might possibly have been spatulate ladles with which to scrape or ladle out cereal offerings or porridge from the sacrificial vessels. The slenderness and delicate construction of some of these, especially those inlaid with turquoise, would seem to rule out this suggestion. On the whole it must be felt that they were purely of a ritual significance, and may be of the nature of a sceptre or baton, even though many of them are quite small and very slender. The fact that they are formed for left and right might imply that they were matched in pairs; and numerals up to the figure five (*Pl.* XXII), cut on the thickened ridge of a few, might suggest that they were sometimes arranged in sets, and possibly graded in size.

2. Small spatulas, carved and inlaid.

These are similar in form to the second type of the plain group, but they are beautifully carved on both surfaces, except for the thin spatulate end, while many of them have been inlaid with turquoise (*Pl.* LII). The decorative design on these is carved on both sides at the thicker end, the other end being plain. The design on the obverse is usually a series of frontal monster masks, one on top of the other in tiers, beginning at the thick and widened end of the spatulate, and each becoming smaller as they descend through four or more masks (*Illus. 1*). Then follows a horizontal zone or band containing a stylized *k'uei* dragon, with a single oblong eye in the centre, and the body and tail extending on each side, somewhat as if the animal had been split open and the halves extended, with the single eye formation in the centre. Attached to this zone there is a pointed border of stylized cicada design, with the points extending into the plain or spatulate field of the object (*Illus. 1*). The masks arranged in tier on each object are the same, but there are different horn or crest variations on different objects. One kind of horn is the crescent-shaped horn of an ox or buffalo (*Illus. 4: B*). Another is a T-shaped design which may be the ears of a feline animal (*Illus. 4: A*), and a third is a stub-ended horn (*Illus. 4: B*), of an animal which may possibly be a ram.

On the reverse of this type of spatula, the design is that of monsters in profile, with strong jaw and snout formation, an extensive horn or crest development, and the striking single eye so characteristic of Shang (*Illus. 4: A*). The zone with the stylized *k'uei* dragon, and the cicada-pointed fringe are the same as on the obverse. The reverse carries the thickened ridge along the edge, left or right, similar to the plain spatulas of group one. The designs of some of these objects are cut deeply for purpose of inlays, and still retain fragments of turquoise, while others have had no inlays at all, yet all this large group follow rigidly the same pattern for the decoration of both obverse and reverse respectively. Fragments of some fifty of this type of spatula are in the Museum collection, not all of the same kind of bone, nor obtained at the same time, nor from the same Chinese dealer, so that it may be assumed to be an object of current and general use in the ceremonies or sacrifices (*Illus. 1*).

3. Large spatulas with carved decoration.

These are like the group of plain wider spatulas in their general form, but they are carved on both sides, except for the spatulate ends, similar to the previous group. They differ in that none was inlaid, that there were no frontal masks in tiers, and that a much greater variety of designs of the monsters is found. The horizontal cross zone with the stylized *k'uei* dragon, and the adjoining cicada fringe, are the same as those of the preceding type. The *k'uei* dragon in various forms is found, and also the dragon with bottle-shaped horn (*Pls.* XXIV & XXXVI), which may be the female of the species. The elephant design possibly is also to be recognized (*Pl.* XXXV), and undetermined bird forms. All the designs of the monsters of this group are in profile positions, even the small baby monsters; and the eyes, except in the *k'uei* dragon cross-zone, are the characteristic Shang eyes. Usually there is but one monster design on each surface. Some of the monsters are depicted with long sinuous bodies, and many of them are evidently composite animals. Two fragments of a very white ivory-like bone, which, though evidently belonging to this group, are somewhat different in feeling, may be of another school of carving. One carries a female dragon on one side and a male dragon on the other (*Pl.* XXIV). The other fragment has a tiger on one side (*Pl.* XXIII), and two stylized animals in silhouette on the other. All this group have a background to the carved monsters, filling in the blank spaces, of meanders or key-pattern designs, and many of these decorative fillings can be traced as stylizations of animals (*Illus. 4: D*).

One of these objects has the two characters "Great Ox" (or Buffalo) *Ta Niu*, incised on its margin (*Pl.* XXXV) which probably refers to a sacrifice to God in which a bovine animal was offered. The bone inscriptions record "small" sacrifices and "great" sacrifices, and sometimes state whether bovines were or were not offered.[1]

4. Long light rib-like bones.

These are sometimes entirely plain (*Pl.* LVIII), but others are decorated, usually in very simple linear style, and oftentimes sparsely inlaid with turquoise points (*Pl.* LXII). At least one fragment of this type is known to have carried an inscription (*Illus. 5A*). Usually the inner bone of the thick end of the rib is removed (*Pl.* LIX), while in others it is retained, but in either case the surfaces may both be carved. This bone is so light and brittle that usually only fragments come to light, and the long complete ribs are seldom seen (*Pl.* LXI). These objects also have a plain spatulate end, with the usual cicada-fringe design similar to the previous types.

5. Inscribed, inlaid, and decorated spatulas.

These form a varied group, combining characteristics of two or more of the above four types of spatulas. Where inscriptions are found on these objects (*Pl.* XV*B*) no decoration is carved on that side, but the other surface is decorated with designs similar to those of the previous groups (*Pl.* XV*A*). Most of these seem to be ribs of animals, possibly deer, but this cannot be confirmed.

All the above five groups would appear to be of the same period, probably the reign of the last king of Shang, but some of the designs are considered to be of early types, in which case these bones would then cover a longer range of time. In any case the plain spatulas of group one must be accepted as contemporaneous with the carved spatulas and do not necessarily precede them.

6. Large carved symmetrical spatulas.

This group is the most conspicuous, both in size and grandeur of conception, but very few pieces have yet been forthcoming. They have not the scapula characteristic of the side ridge along the thickened end, but are symmetrical in thickness and sometimes also in the carved designs of the two sides. For instance, there may be a monster's head at the thick end carved in semi-round (*Pl.* XVII), and the other end plain and of a spatulate character. In the semi-round carving, the design on the sides develops from the head of the monster, which is then followed by the regular zones with the *k'uei* dragon in profile, and the usual cicada-design fringe. Sometimes these larger spatulas are approximately like those of the third group in having different designs on the two sides, but they have not the scapula type of side ridge (*Pl.* XVI).

7. Ceremonial bone vessels.

Since the Shang people used bronze, pottery, jade, and stone vessels of various kinds in their sacrificial and ceremonial ritual, they would also be expected to use bone and ivory vessels and objects for the same purpose. Large pieces of bone have been found at Anyang (*Pl.* LXXIV), carved on the convex surface and plain on the other concave surface, which show that they had formed part of vessels which had been built together as coopered vessels. At least some of these pieces have been found to be from the jaw-bone of whale. Some of them showed borings where a jade mask of an animal had been attached, to form a decoration similar to the masks on bronze and pottery vessels. The designs on these pieces were similar to those of bronze and pottery, namely, zoomorphic stylizations, cicada designs, *k'uei* dragons, monster masks, and background of meanders. Some of the fragments show that they had formed parts of square caskets or boxes, while others were from round sections of ivory tusks or built-up sections of bone (*Pls.* LXXIV-LXXV). Many of the fragments have been scorched and hardened by fire, probably when the palaces of the court were burnt and razed by the Chou conquerors at the end of the Shang Dynasty. Most of these bone and ivory ceremonial vessels can only be visualized from the small fragments remaining, but these tell a tale of the advanced technique and aesthetic beauty of the bone culture of Shang, a culture which the Chou conquerors did not preserve and continue, as far as can be known at present.

8. Various ceremonial bone and ivory objects.

These also are fragmentary. A large ivory staff end (*Pl.* LXXII) with line carving of stylized cicada design, thirteen inches in length, would appear to be of ceremonial significance. Mace or staff heads are sometimes beautifully carved (*Pl.* LXXII), and some had been attached to wooden staves by bone pins. Many of this and of the previous group had been inlaid with turquoise, and some show traces of pigment, probably red ochre, and what may have been brown lacquer. One fragment of inscribed tortoise-shell oracle bone should be mentioned here, for it had been cut right across the inscriptions, into the standard shape of a ceremonial spatula, as far as the shell would allow (*Pl.* XIV). Though unique as far as is known, this would seem to show that used and discarded oracle bone could be re-shaped and put into use in the ceremonial form of a spatula, even though the inscription had to be cut across.

A great number of carved bone ceremonial vessels and objects of this Shang period, either whole or fragmentary, and possibly of other forms than the above, must exist in other collections, but this present record is concerned only with the objects in the Royal Ontario Museum collection.

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[1] Ch'en Meng-chia, *Sacrificial Systems as Found in Ancient Inscriptions of Shang and Chou* (in Chinese; Yenching Journal, no. 19, Peiping; June, 1936).

[2] Tung Tso-pin, *Criteria on the Oracle Bones* (Academia Sinica, Peiping, 1933); *Contributions to the Study of Oracle Bones* (Bulletin of Chinese Bibliography, vol. II, no. 3; Yunnan, 1940).

[3] H. G. Creel, *Studies in Early Chinese Culture* (Baltimore, 1937).

VI

VARIOUS BONE AND SHELL OBJECTS

APART from the oracle bones with their inscriptions, and the bone ceremonial objects, the purpose of which and their method of using are still unknown to us, there is a varied group of bone objects which belongs to the crafts and occupations of the people. These again are fragmentary and incomplete, and the items could be supplemented from similar objects in other collections.

1. Bone stock.

There are many pieces of selected bone, sawn in convenient lengths and shapes, which were the stocks drawn upon for the small bone implements, such as needles, awls, arrow-points, and other objects (*Pl.* LXVII). These pieces show by the saw marks that they were sawn by a bow-strung thong or cord with the use of an abrasive. The implements, after being roughly shaped, were apparently filed smooth and then polished. It is known that bronze files were used by the Shang people. Quantities of stag horn, and tusks of various animals, also appeared to have been stored, for the purpose of making implements and objects (*Pls.* LXV-LXVIII).

2. Bone weapons.

The composite bow was one of the most common weapons in use, and pictographs of bow and arrows are frequently noticed in the oracle bone inscriptions. The composite bow is made of horn, bamboo, fibrous wood, sinew, and raw-hide, and is a very powerful weapon. When unstrung its bend is in reverse. A carved bone bow-tip with turquoise inlay shows that some of the bows must have been quite elaborate (*Pl.* XCII). Shang arrow-points are found of bronze, stone and jade, marine shell (*Pl.* CXIV*E*), ivory (*Pl.* xcv*H*), and bone, but the bone points greatly outnumber those of the other materials. These points are in three main groups, one for archery practice and games, another for hunting or offensive warfare, and a third for ceremonial use (*Pls.* xciii-xciv). Besides these three groups there are various shapes and kinds, ranging from a well-proportioned rounded point, to a flat point with a centre rib and side wings (*Pls.* xcv-xcviii). They were made with a stem, which was probably inserted in the end of a bamboo rod, and marks on the stems of these points show that they were tied in position with a fine thong. Jade and bronze archers' thumb rings are known to have been used, and probably bone ones were also current, as was the case in the later Chou period. A bone point, similar to an arrow point, but larger and slightly different in form (*Pl.* xcviii*A*), is taken to be a lance tip. This was probably not a long-handled lance, but short and slender, and thrown as a javelin. Shields were in use, but whether they were made of bone framework, with raw-hide or leather stretched over them is unknown, but it is quite probable that bone, as well as wood and bronze, was used for the frames. Rectangular plates of tiger or boar tusk (*Pl.* lxviii) were probably used as armour plates (*Pl.* xcii*B*), for bone armour plates were apparently in use in that period or earlier,[1] and unless they were for belt decoration there seems to be no more reasonable theory concerning the use of these plates.

It is possible that bone spear-points, dagger-axes, and other axes and knives were made in this period, of shapes suited to bone technique, such as may be found in bronze, jade, and stone, but if so they would doubtless be of the *ming ch'i* class, which were not for ordinary use, but were ceremonial and symbolic, and for the purpose of depositing in the tombs.

3. Horse trappings.

Very little bone material has appeared which may be considered as belonging to horse equipment, and of this the main objects found are bone bit guards (*Illus. 5B*). Bone and ivory rings may belong to this group (*Pl.* lxxii*A*), as well as toggles (*Pl.* lxx*B*), and what might be strap connectors (*Pl.* LXX*C*), while harness straps might well have been decorated with carved bone plaques, similar to those made in shell (*Pls.* CVIII-CXIII).

4. Domestic implements.

Bone implements of various kinds are not common, but those found are very suggestive, and point to the possibility of a wide range of such objects having been used. Bone spinning-whorls, with conical tip, and intended to be weighted with pottery or jade or stone or shell discs at the other end are not uncommon (*Pl.* LXXXIV). Bone awls and needles (*Pl.* LXXXIII) are common, and fish-hooks (*Pl.* XCII), and wax and clay smoothing tools (*Pls.* LXXXI-LXXXII). Of the latter there is a wide variety ranging from plain points and knives to very elaborate ones. One type has a hand carved at one end, and a spatulate chisel at the other (*Pl.* LXXXII*A*). This is not an isolated specimen, for the bone hand of what must have been a similar implement was also found (*Pl.* LXXXI*F*). Some of these bone scrapers were in the form of animals, such as fox, and cicada, and fish, but most of them had a spatulate chisel at the tail end of the object. Similar spatulate chisels are found on small jade objects which were doubtless used for the same purpose.

5. Hairpins.

This group is so large and varied as to warrant a section of its own. Some are plain or with conical tips, others have a stylized rectangular tip, while many are bird-shaped, or monster-headed, or of architectural design difficult to classify. The pins of some have been so worn down that they could not have been of much use, other than to carry the decorated end, and be thrust into the hair as a decorative object only.

6. Various.

Under this group may be included bone musical instruments, one of which of an ocarina type (*hsüan*) is said to be in the Academia Sinica collection, and there are various deer-horn fragments of unknown use. Bone was probably used in connection with drums of various kinds, and possibly for bell or drum knockers, or for clappers (*Pl.* LXIX). Bone beads and pendants were also known, which were probably similar to jade pendants (*Pl.* LXXIX*A*), and a turquoise inlaid tube (*Pl.* LXXIII*A*) also may have been used as a decorated ornament of this nature. Staff terminals of carved bone are also quite common (*Pl.* LXXI).

7. Shell objects.

Mother-of-pearl and marine shell objects are so similar to the bone objects that they might well be included in this group. In the matter of shell weapons, there are arrow points (*Pl.* CXIV*F*) and what may be a spear point, for it is shaped like a jade spear point; or it may be an armour plate, or some other unknown object (*Pl.* CVI*D*). Spinning whorls of mother-of-pearl are common and found in various sizes (*Pls.* CIX-CXII). The design on some is that of a group of four spirals or a single spiral (*Pl.* CXI) and others are quite plain. A similarly shaped object is in the form of a rosette (*Pl.* CXI*A*), very much like that found on bronze and white pottery, and is probably not a spinning-whorl. Other objects of the same general type have not a central pierced hole, and so cannot have been whorls, but may have been decorative plaques. Some of these are plain (*Pl.* CXII), others are of three-sectioned whorl design, and one type of the latter is pierced through on the under side for sewing on to leather or cloth, as a button might be attached. These may be ornamentative plaques, similar to other objects in the form of cicadas, or bird, or fish (*Pls.* CVI-CVIII). Other plaques probably of a similar use were triangular and rectangular (*Pl.* CXIII).

Cowrie shells, used for decorative purposes, and as currency and for barter, are very common, and may be either whole, or with the rounded top ground down (*Pl.* CXIV). Cowries made of mother-of-pearl are also found, and cowrie-shaped objects may possibly have been carved from bone, as they were in the Chou Dynasty, though as far as is known no bone cowries were forthcoming from Anyang. Other marine shells were pierced, and may have been strung for necklaces. Small round beads made from mother-of-pearl, and pierced for stringing, seem to be similar to those of the succeeding dynasty, and small pierced shell beads of the wampum type (*Pl.* CXIV), were also common. Many pieces of shell, cut in various shapes (*Pls.* CII-CVII), we now know to be inlays in a back-ground of clay or lacquer, to form designs of monster masks (*Pl.* XCIX) and shapes of various objects. Stone plaques of the same type are also known, and these were sometimes used jointly together with the mother-of-pearl, to form monster masks (*Pl.* XC). What were probably wax-smoothers, of fish shape and similar to those of bone and jade, were also made from shell (*Pl.* CVII*B*). Many of the shell objects show that they have been burnt, and this may have been done when the Chou leaders destroyed the Shang capital.

Some of the above shell objects have their parallels in material scientifically excavated in the Hsün Hsien tombs in 1932-3. Some of these tombs, by the inscribed weapons found in them, can be dated to the period of K'ang Hou, the younger brother of Wu Wang, and would thus be immediately following the overthrow of the Shang Dynasty. Many cowrie shells were found there, and decorative objects made of mother-of-pearl similar to those mentioned above. The most interesting objects were giant animal masks (*fang hsiang*), built up in sections, and similar to various bronze mask sections occasionally appearing in material from Anyang. In tomb 8 excavated at Hsün Hsien there were no less than seven of these built-up masks, and the parallel to the mother-of-pearl masks illustrated in this record is very striking. These masks are likenesses of hideous monsters placed in the tomb to dispel evil influences. Modern Shaman exorcists are called *fang hsiang shih.* There is also given below a fragment of carved bone (*Pl.* LXXX) which is said to have come from Hsün Hsien, and is remarkably similar in feeling and design to a mother-of-pearl inlaid object obtained from tomb No. 1 of the Hsün Hsien excavations.[2] From this same tomb also there came a carved jade spatula similar in shape and decorative design to the carved bone spatulas described in the previous chapter.

It should be noted that in the excavations at Anyang enormous quantities of *Lamprotula* shells were found. This thick Unionid was used for its mother-of-pearl, and probably was brought to Anyang from the Yangtzu valley.

The tortoise shells found at Anyang are said to belong to the two forms *Ocadia sinensis* and *Geoclemys reevesii*, the latter being more common to southern China.[3]

[1] J. G. Andersson, *Children of the Yellow Earth* (London, 1934, Pl. 24, p. 248).

[2] Kuo Pao-chün, *Report on Excavations at Hsun Hsien, Honan* (Journal of the National Research Institute of History, 1936, pp. 167-200).

[3] M. N. Bien, *On the Turtle Remains from the Archaeological Site of Anyang, Honan* (Bulletin of the Geological Society of China, vol. XVII, no. 1; Nanking, 1937).

VII

ANIMAL STYLE

THE particular style of decoration in which animal motifs prevail used to be known as Scythian,[1] because it was characteristic in Scythian culture and it was assumed that it originated in ancient Scythia in the region of the Black Sea, and from there extended to the many outside places where such has been found.

Parallels to the Scythian style are found in many countries, and in widely different periods of time, so that it is now more generally known as the Animal Style.[2]

It is characteristic in the oldest deposits in Mesopotamia and pre-dynastic Egypt, in Scandinavia, in South Russia and Siberia, and in Mongolia, particularly in the Ordos region. Out-croppings of this style are strikingly evident in objects of pre-Christian times, obtained from the Yellow River region in China proper, from areas which were centres of ancient Chinese civilization, during the Shang and Chou Dynasties in particular.

It is now generally believed that the culture of the Shang Dynasty (*c.* 1766-1123 B.C.), which is so strongly zoomorphic in its art motifs, must have originated and developed somewhere in the North China plain in the vicinity of the great bend of the Yellow River.

In the latter half of the Chou Dynasty (770-221 B.C.) another type of Animal Style was evident, in many respects different from that of Shang, and actually more like that of the Scythians. A reasonable explanation would seem to be that cultural conceptions of Shang were carried westwards in various ways, and having undergone modifications returned to the Yellow River areas changed into the lighter and more refined Animal Style of late Chou.

The decorative designs on Shang objects, whether on pottery, bronze, bone, jade, or stone, are all of animal style, and range from naturalistic to highly conventionalized forms. There seem to be no floral *motifs*, though the delicate fern-like fronds on *ku* and other types of vessels, and the rosettes and quadrefoils on zonal bands (*Pl.* cxi*A*) appear to be anything but animal design. Yet there is a well-developed and complete sequence relating the frond to the cicada (*Illus. 4*), and the rosette to a rectangular animal stylization, of which the central eye is the animal eye, such as is indicated in zone *B* of the bone spatulas (*Illus. 1 and 4*). Spirals, stars (*Pl.* xviii), lozenges and the various meanders also might be traced to an animal source, either the object itself, or the environment which may be considered the habitat of the animal object, such as the heavens with its clouds and thunder, lightning and wind, or the waters with which dragon and fish and turtle are associated.

The meanders found on Shang objects of bronze and bone, pottery and jade and stone, are endless in variety, and are almost entirely backgrounds and border decorations.

In the *Po-ku-t'u*, a Ming Dynasty reprint of a Chinese Sung archaeological work, the background meander is spoken of as thunder design (*lei wen*) or clouds and thunder design (*yün lei wen*), while there is a wind pattern (*feng wen*), a cicada (*shan*), an eagle (*ying*), and various other designated designs. Animal masks are usually known as "gluttons" (*t'ao t'ieh*), and dragons are of various kinds. The most common is the *k'uei* dragon, known as the "one-legged" dragon, because it is usually depicted in profile with one or at most two legs showing. Other dragons mentioned in the Chinese records are the scaly dragon (*chiao ch'ih*), the coiled dragon (*p'an ch'ih*), and the wriggling dragon (*p'an ch'iu* or *p'an-hui*).

There have been many suggestions put forth as to the origin of the dragon conception in China, but there seems to be not a scrap of evidence pointing elsewhere than to a Chinese source. Fossil crocodile remains have been found throughout the area of most ancient China, and crocodiles are still existent in China today south of the Yang-tse River. Moreover, the young crocodile when it comes out of its egg is indeed a miniature copy of its parents; and an interesting fact in the Shang Dynasty depictions of dragons is that one or more baby dragons often fill the empty places by or under the parent (*Illus. 4; Pls.* XXI-XXII).

The winged dragon is not found among Shang dragons, and does not seem to appear until late Chou, or even Han times, probably the third or second century B.C.

The Chinese differentiate male and female dragons and a scholar, writing a thousand years ago, tells of an artist who attributed pointed horns to the male dragon, and sawed-off bottle-shaped horns to the female (*W. C. White, Tomb Tile Pictures, p. 44; Toronto, 1939*).

On the oracle bones incised thirty-three centuries ago in Honan, are simple pictographs of dragons drawn at that time, showing various forms (*Illus. 3D*), and though the bone script was a written record, yet characteristics noted on the dragon graphs, are obviously related to the more artistic and perfect pictures carved on the bones in relief or semi-round.

Chinese folklore is rich in reference to dragons of all kinds. Their origin is attributed to a sea-serpent which, after a period of five hundred years may become a scaly dragon, and after another thousand years may become a hornless dragon. After another five hundred years he may become a horned dragon, and again after a period of a thousand years he becomes a winged dragon.

Other animals traced in the stylized carvings on the bones are the tiger and buffalo, deer and ram and ox, possibly the elephant, birds and cicadas, and fish and turtle. Animals mentioned in the oracle bone script, but not pictured in bone, are the horse, pig, and dog. A pair of animals in apposition (*Pl.* LXXIX*D*) have their counterpart in a pair of tigers in the bone script (*Illus. 3A:10*).

No insect has been found among the designs carved on Shang objects except the cicada, and this is very general, being found in a long range from naturalistic to highly stylized forms (*Illus. 3G; 4E*).

In Western classical literature the number of references to the cicada is remarkable. In Chinese literature it is also prominent, and common belief from early times has associated it with the life after death. Two thousand years ago the Han people carved jade in the life-size form of cicadas, and one of these objects would be placed in the mouth of the dead at burial. But more than a thousand years before that again the Shang people made these jade cicadas, and deposited them with their dead, and they carved and moulded the cicada design on their pottery and bronze and bone and jade objects. It was a common symbol which illustrated the intense reality of their belief in the life beyond the grave.

Although characteristics of distinctive animals and birds can be traced in the designs, in most cases it is evident that they are really combinations, and that there is no consistency in the animal designs. Bovine horns may be found on dragons and birds and even on cicadas. The forearm and claws of a feline beast may be used on dragons and even birds; and dragon body forms may have eagles' heads, and a fish may have a crest the form of which is that usually associated with the mask of a feline animal (*Pl.* xvii*C*).

Large quantities of animal skeletal remains have been excavated, together with archaeological material, on the site of the Shang capital at Anyang, and the following extracts are the conclusions formed by palaeontologists from an examination of these animal bones. One interesting fact that emerges from this investigation is that certain animals living in that area in the Shang Dynasty are now known to be extinct species, one of which is a large water buffalo (*Bubalus mephistopheles*),[7] the horn-cores of which have been found in quantity (*Illus. 5*), and its depictions are common on jade, bronze, bone and pottery of the Shang period.

ON THE MAMMALIAN REMAINS FROM THE ARCHAEOLOGICAL SITE OF ANYANG

P. Teilhard De Chardin and C. C. Young[3]

EXTRACT ON CONCLUSIONS

1. Composition of the Anyang Fauna

The archaeological site of Anyang was known a long time ago and the bones recovered from its deposits have been widely distributed among shops and collections. To Matsumoto, however (1916), we are indebted for the first scientific description of a limited series of specimens which had been sent to Japan for study by the College of Agriculture of the University of Peiping.

The forms determined by Matsumoto (who regarded the fauna as Pleistocene) were: *Equus leptostylus* sp. nov., *Sus.* cf. *scrofa* L., *Cervus hortulorum* Swinhoe, *Elaphurus davidianus* M.-Edw., *Bos primigenius* Boj., *Bison exiguus* sp. nov., *Elephas* cf. *primigenius* Bl., *Homo* (aff. *neanderthalensis*, a sacrum).

Using the much better material collected by Dr. C. Li, and also directed by the knowledge of the real (proto-historical) age of the deposits, we are now able to give a much more complete and correct list which is as follows: (The asterisk indicates the most abundant types)

**Canis familiaris* L.
Canis (*Nyctereutes*) *procyonides* Gray
Ursus sp.
**Ursus* cf. *japonicus* F.
Meles leucurus Hodg.
**Felis tigris* L.
Felis pardus L.
Cetacea indet.
Epimys rattus L.
Rhizomys cf. *troglodytes* Matth. and Gr.
Lepus sp.
Tapirus indicus Cuvier
Equus caballus (leptostylus? Mats.)
**Sus vittatus* var. *frontalis* var. nov.
Sus. cf. scrofa L.
Hydropotes inermis Sw.
**Pseudaxis hotulorum* Sw.
**Elaphurus menziesianus* Sow.
Ovis shangi sp. nov.
Capra sp.
Bos exiguus Mats.

**Bubalus mephistopheles* Hopw.
Elephas indicus L.
Macacus tchihliensis M.-Edw.

In this new list, the Pleistocene forms of Matsumoto have disappeared (including *Homo* aff. *neanderthalensis* which turns out to be an early Chinese). On the other hand, the fauna assumes a composite character which has to be disentangled with the help of the historical data recovered by Dr. C. Li and his collaborators.

2. Analysis of the Anyang Fauna

A dominant cultural fact is that the Anyang citizens were industrious, commercial and agricultural people, working bone extensively for economic purposes, and that in addition, they regarded hunting big game as a royal achievement. These conditions explain why the faunistical remains recovered from the ruins of the city are so abundant, so various and so heterogeneous.

Three groups seem to be recognizable in this fauna: the wild indigenous animals; the domesticated local animals; the foreign imported animals. And two of them include a certain number of extinct or migrated forms.

(*a*) *The wild indigenous animals.* As representatives of a wild indigenous fauna of N. Honan in 1500 B.C. may be held, with more or less great probability: the Racoon-dog (*Nyctereutes*), the Bear (V. cf. *japonicus*), the Badger, the Tiger, the Panther, the common Rat, the Bamboo-Rat (*Rhizomys*), the Hare, the water-Deer (*Hydropotes*), the Sika (*Pseudaxis*).

The actual disappearance in the considered area of *Nyctereutes*, Tiger and Sika is readily explained, namely by the destructive action of man. The shifting toward the south to the Yangtze valley of *Rhizomys* (if it does not belong to an entirely extinct form) and of *Hydropotes* is a more interesting fact. But our knowledge concerning the ecology of both these animals is not sufficient for an appreciation as to how much this migration should have to be correlated with a climatic change or only with some agricultural transformation of the soil.

(*b*) *The domesticated animals.* In the group of domesticated animals we include: the Dog, the curious Pig (*Sus.* var. *frontalis*), the Sheep and the Goat, and more tentatively the strange *Elaphurus*, the *Bos*, the massive water-Buffalo, and the *Macacus.*

As stated above, the Pig would represent a highly specialized breed of a southern origin (S. *vittatus*). The queer *Elaphurus* is possibly a mutation, preserved for its beauty or its useful antlers. The *Bos* is perhaps a domesticated race of Aurochs. As for the primitive looking *Bubalus*, we regard it as the offspring of a Pleistocene Chinese Buffalo, raised by Man, unless one prefers to assume that it was imported from the distant Philippine Islands.

In any case, these three forms are actually extinct, the disappearance of *Bubalus* pointing more especially to a slight climatic change. (Concerning this point, it should be interesting to know to which group of *Bubalus* the water-Buffalo belongs which Dr. J. G. Andersson collected in the peat-bogs of the Peiping area: to the *Mephistopheles* or to the *Arni* group?)

3. The Problem of the Post-Loessic Fauna in China

The above discussion concerning the manifold origin of the Anyang Animal remains forces one to realize vividly how essential and delicate the task is of drawing a line between the Pleistocene and the Holocene faunae in N. China. We still assume that a deposit is of Pleistocene age if it contains *Rhinoceros*, *Elephas namadicus* or *primigenius*, *Hyaena*, *Euryceros*. But the presence of Ostrich might be less decisive, since the eggs of this bird were commonly used (in a fossil condition?) by the Mongolian Neolithic or Azilian population (cf. Andersson, 1923). As for the trihedral-horned Buffalos, we have learned through the case of B. *Mephistopheles* that their group was still surviving (at least artificially) in the proto-historical times.

The truth is that in the cases where a Pleistocene looking animal occurs on a deposit, we always have to face the possibility of it being a residual form (as it happens for the *Hipparion* in Nihowan, for the *Hipparion* and *Dinotherium* in Central Africa, for the *Mastodon*, etc. in America . . .). And, in the case of a well proven extinction, we still have to decide whether the considered type disappeared under natural circumstances (physiological weakening, climatic change . . .), or because of the action of Man (deforestation, hunting, agriculture . . .). Natural factors have a *geological* value, but not human action.

The essential base to solve these questions should consist of a careful survey of those non-cultural formations which, on a safe stratigraphical and physiographic ground can be held as bridging the Pleistocene with the Historical times. Such beds are still, geologically, a "no man's land"; more attention should be paid in future to the redeposited loess, to peat-bogs and to sub-recent cave deposits.

In a "redeposited loess" the work is made especially delicate on account of the difficulty met in fixing the true age of the "loessic" torrential beds (sometimes Pleistocene, sometimes extremely young), and because of the rolled condition of the bones they contain. Nevertheless, the formations of this type are at times clearly dated and fossiliferous, and as an example, we may mention the river silts capping the Palaeolithic site of Shuitungkou, (Boule, M., Breuil, H., Licent, E., & Teilhard de Chardin. Le Paléolithique de la Chine. Archives de l'Institut de Paléontologie humaine, Mém., 4, 1928, p. 10), or the thick grey loam dissecting the Sjara-osso-gol sands at Siao-k'iao-pan (SE. Ordos) (Teilhard de Chardin and E. Licent. Observations géologiques sur la bordure, . . . , de l'Ordos. Bull. Soc. Géol. France, sér. 4, T. XXIV, 1924, p. 86), or the extensive Laoho formation of Jehol (Teilhard de Chardin.

Etude géologique sur la région du Dalai-noor. Mem. Soc. Geol. France, nlle serie, T. III, fasc. 3, 1926, p. 12).

Much more promising but still deceitful are the peat-bogs such as occur in the vicinity of Peiping (see Andersson, 1923), and probably elsewhere.

An ideal way to advance and solve the question of the Pleistocene residual faunae would be to discover some dated post-Loessic cave, or fissure, in which bones would have been accumulated by Carnivora or caught in a trap. The case of Choukoutien, where an apparently continuous series of fissure deposits covers the whole Pleistocene times, is an indication that such a hope might some day turn into a reality.

ADDITIONAL NOTE

Since the redaction of this Memoir (1933) several new facts have been brought to light which modify to some extent the statements or the views presented above. (These results, gathered by various members of the Cenozoic Laboratory will be soon published in the Bulletin of the Geological Society of China.)

1. A fossil Tapir is now known from the Pontian of Shansi, North-China (see O. Zdansky, Equus and other Perissodactyla, Palaeontologia Sinica, Ser. C, Vol. VI, fasc. 5, 1935). Cf. above, p. 17.

2. Complete skulls of a water-Buffalo belonging typically to the *mephistopheles* group have been collected in the Early Pleistocene "reddish clays" of Western Honan (Miench'ih) and of Northern Shantung (Linchu). In addition, a horn-core of the same type has been recently found in the Early Pleistocene fissure-deposits (Stegodon beds) of Wanhsien (Szechuan). These discoveries support the idea that, in Anyang, *Bubalus mephistopheles* represents an old indigenous type (artificially prolongated by domestication?), rather than an imported foreign form. Cf. above, p. 54.

3. An Elephas (immature lower mandible) is now known from the Stegodon fissures of Szechuan: apparently a *namadicus*. Concerning the Mammoth, the fact still holds strong that the form does not occur in N. China south of the Sungari basin (Manchuria). Cf. above, p. 55.

(NOTE: All page references given above are those of the original monograph from which this extract is taken.)

ON THE TURTLE REMAINS FROM THE ARCHAEOLOGICAL SITE OF ANYANG, HONAN

M. N. Bien[4]

EXTRACT ON DISCUSSION AND SUMMARY

Ocadia sinensis and *Geoclemys reevesii* are both living forms. The former form is restricted to the South (Fukien, Kwangtung, Kwangsi, Hainan, and Formosa), while the latter is very widely distributed in China and frequently helped by human agencies. The latter form has also occurred as a fossil in the Lower Pleistocene deposits of Choukoutien (Locality 3), Hopei.

This occurrence of *O. sinensis*, a southern form, at Anyang in historical time is interesting. It could have been introduced there during the Shang dynasty. P. Teilhard and C. C. Young in their study on the mammalian remains of Anyang have concluded that there were foreign and imported animals and they say, "This group includes the Whale, the Elephant and the Tapir and perhaps the small *Ursus* sp. Bones of Whale could easily be collected anywhere along the closest sea-shore. Elephant and Tapir, on the contrary, seem to have been imported alive from the South. An extensive trade between Anyang and southern China is proven by the discovery in the ruins of the city of ingots of tin and also of an enormous quantity of *Lamprotula* shells. This thick Unionid (used for its mother-of-pearl) has become rare ever since the Upper Pleistocene in China. It was therefore probably brought to Anyang from the Yangtze valley." *G. reevesii* could have occurred as a native form. Furthermore, as the plastra of turtles are extensively used for oracle bones, it is quite conceivable that the Anyang people could have collected turtles and bred them for this single purpose.[4]

[1] M. Rostovtzeff, *The Animal Style* (Princeton, 1929).

[2] G. Borovka, *Scythian Art* (New York, 1928).

[3] P. Teilhard de Chardin and C. C. Young, *On the Mammalian Remains from the Archaeological Site of Anyang* (Palaeontologia Sinica, Series C, vol. XII, fasc. 1; Nanking, 1936).

[4] M. N. Bien, *On the Turtle Remains from the Archaeological Site of Anyang* (Bulletin of the Geological Society of China, vol. XVII, no. 1; Nanking, 1937).

[5] C. C. Young, *New Triassic and Cretaceous Reptiles in China* (Bulletin of Geological Society of China, vol. XVII, no. 1; Nanking, 1937).

[6] W. C. Pei, *On the Upper Cave Industry* (Peking Natural History Bulletin, vol. XIII, part 3; March, 1939).

[7] C. C. Young, *New Finds of Fossil Bubalus in China* (China Geological Bulletin, vol. XV, no. 4; Nanking, 1936).

[8] B. Karlgren, *Yin and Chou in Chinese Bronzes* (Bulletin, Museum of Far Eastern Antiquities, no. 7; Stockholm, 1935).

PART II

ILLUSTRATIONS AND TABLES

ILLUSTRATIONS AND TABLES

1. A Carved Bone Spatula
2. Tables of Ceremonial Graphs on Bone
3. Table of Animal Graphs on Bone
4. Animal Design Sequences
5. Various Bone Objects
6. Animal Designs on a Shang Bronze *Ko*
7. Animal Designs on Six Bronze *Ko*
8. Bronze Ceremonial Wine Vessel
9. Jade Mask and Pottery Dragon Design
10. Animal Design on Shang Objects:
    Pottery, Bronze, Jade and Stone

A CARVED BONE SPATULA

(Length 10 inches)

Complete except for the loss of a fragment on the lower corner of the plain end of zone **C**, and a tip of the corner of zone **A**.

The illustration shows clearly the three standard zonings of the obverse or convex aspect. The decoration is that of three feline masks arranged in a tier which occupies the whole of zone **A**; of a highly stylized *k'uei* dragon filling the small central zone **B**; and of a cicada border and plain field of zone **C**.

This object was in the possession of the Yamanaka Company, New York, and is now said to be in the Winthrop Collection of the Fogg Museum, Boston.

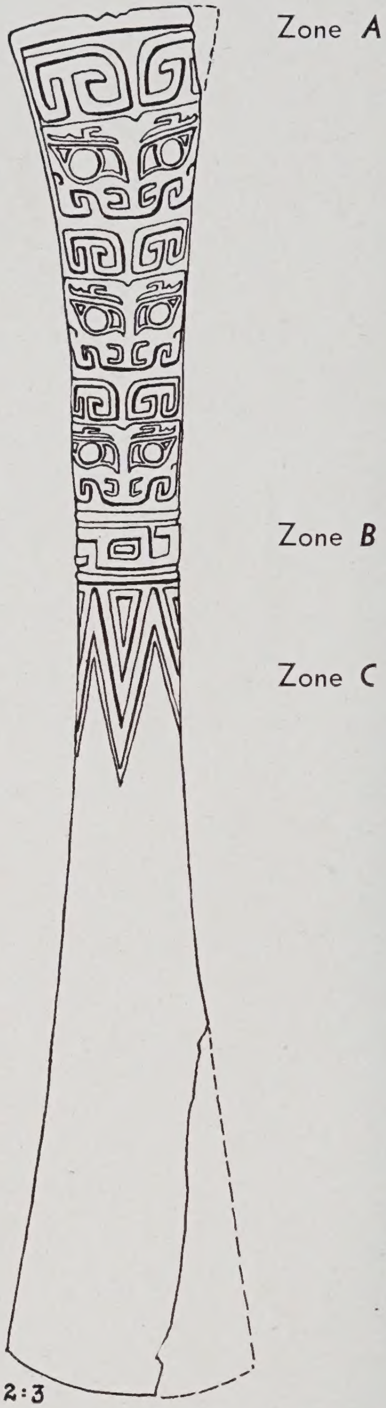


Illustration 1: Carved Bone Spatula.

ZONAL DEMARCATION OF THE SPATULATE BONES

The carved bone spatulas invariably are demarcated in a conventional order, both on the obverse surface which is the convex aspect, and the reverse surface, which is the somewhat concave aspect of the bone. The thicker end, zone *A*, is usually at the bottom, and the thin spatulate end, zone *C*, at the top (*Pl.* XV) but sometimes these zones are reversed and zone *A* is at the top as in the accompanying illustration. When this is so the designs on the two surfaces are very often inverted in their relationship to each other (*Pl.* XLIX).

The thick raised ridge of the spatula is always on the reverse surface, and may be on either the left or right edge. It usually extends along the whole length of zones *A* and *B* and ends at zone *C*. Spatulas are also found without this ridge (*Pls.* XVI-XVIII), but they are less common.

On the obverse surface zone *A* is usually filled with frontal masks, or a back full-length view of a sinuous lizard-like creature (*Pl.* XXI); and less often there is a silhouette view of an animal form, either naturalistic (*Pl.* XXIII) or stylistic (*Pl.* XXXII).

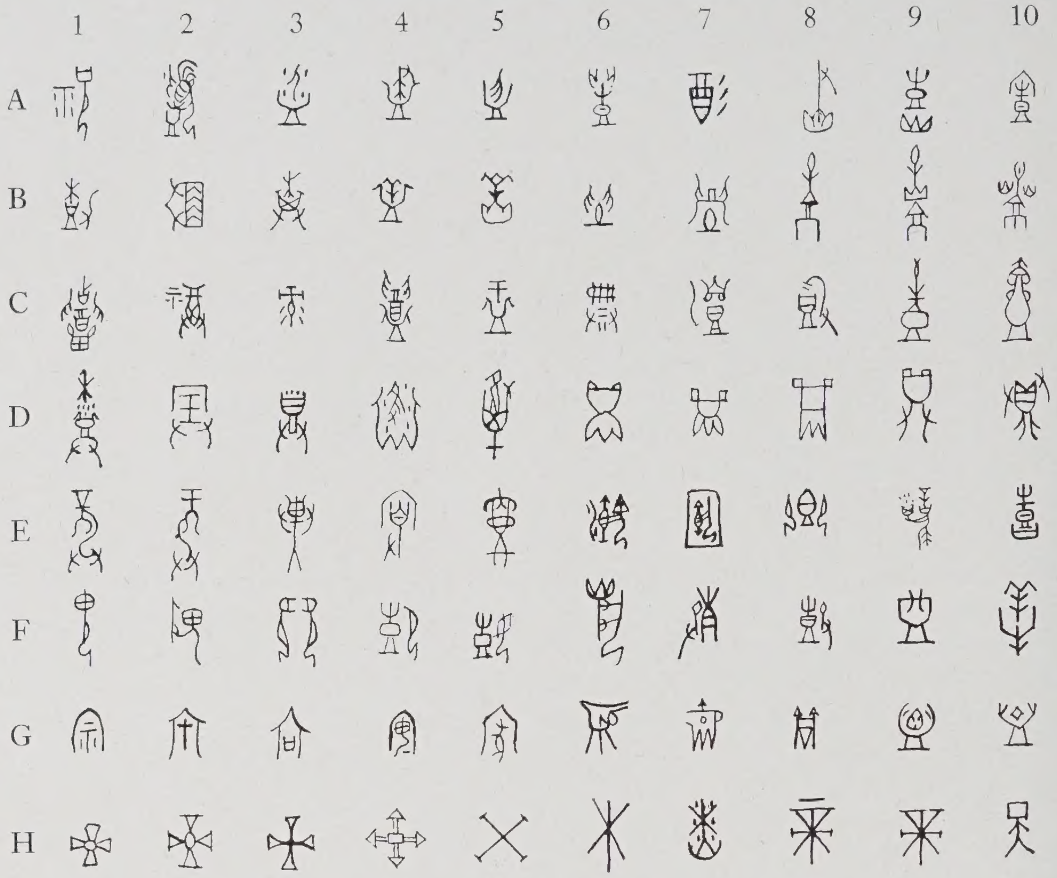
On the reverse surface zone *A* is occupied only with silhouette shapes (*Pl.* XXII) except when a carved inscription is used (*Pl.* XV) or very seldom a small animal in high relief (*Pl.* XIX).

Zone *B* is a small transverse zone, separating zones *A* and *C*, and is occupied on both the obverse and reverse surfaces with a symmetrical, and simply-stylized animal design, with a single central eye. Both obverse and reverse surfaces carry this zone, but the designs are slightly different, that of the obverse being more sophisticated, and the reverse quite simple in stylization. Seldom is this zone found with a naturalistic animal design, but when it is the animal invariably is in silhouette (*Pl.* XVI).

Zone *C* has a triangular pointed border, attached to zone *B* with its points radiating out on the plain spatulate end of the bone.

These triangles are stylizations of the cicada insect, and range in all stages of development, from naturalistic forms (*Illus. 4 and 6; cp. Pls.* XV, XVI) to very simple stylizations (*vide* Carl Hentze, *Frühchinesische Bronzen und Kultdarstellungen; Figs. 1-41; Antwerp, 1937*).

I. Ceremonial Graphs on Oracle Bones.


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H

II. Modern Chinese Script of the Above Graphs.

	1	2	3	4	5	6	7	8	9	10
A	祝	沫	浴	盡	盥	豐	酒	隶	熺	宣
B	樹	謝	糞	盖	羔		灶			赫
C	召	福	祿	盦	盂			敼		壺
D	烝	巫	彝	鑊	羅	甗	甗	甗	鼎	鼎
E	虬	虬	異	窔	壼	罷	[illegible]	鄉	僕	禧
F	鬼	畏	从	侸	[illegible]			鼓	禋	華
G	宗	宗	向	安	家	爵	爵	斝	昷	血
H	癸	癸	癸	癸	癸	朩	尞	帝	帝	矢

Illustration 2: Tables of Ceremonial Graphs on Bone.

KEY TO TABLE OF CEREMONIAL GRAPHS

NOTE: Most of these readings are according to Lo Chen-yü. The Romanized word, and meanings at the end, are script developments in modern use as given in Illustration 2: II.

A 1. A spirit, water, and a kneeling man. *Chu*: to invoke, pray.
2. A vessel, and a man washing his face; probably a ceremonial ablution. *Mei*: a place name.
3. A man in a vessel containing water. *Yü*: to wash or bathe.
4. A stylus or brush being dipped into a vessel of water; possibly an act of consecration of the stylus. *Chin*: to exhaust (the contents of a vessel by fire).
5. Washing the hand in a vessel. *Kuan*: to wash the hands.
6. A ceremonial symbolic object. *Feng*: abundant, luxuriant.
7. A ceremonial wine vessel, with water beside it. *Chiu*: wine.
8. A hand grasping a metal rod being heated in fire, probably for singeing the oracle bones. *Po*: a poker.
9. A symbolic tree over a fire. *Hsi*: ancient worship of lucky stars. (*Williams' Dictionary*)
10. A symbolic tree with a covering hood or pall.

B 1. Vessel, tree, and a hand. *Shu*: a tree.
2. Two hands holding a mat, or more probably a rolled mat. *Hsieh*: to thank, thanks.
3. Vessel, rice, and two hands. *Yi*: a general class of ceremonial vessels.
4. Ram in a ceremonial vessel. *Kai*: to cover, to build, to seal.
5. Ram over fire. Possibly name of a Shang ancestor. *Kao*: a lamb, a kid.
6. A burning fire, with two hands receiving it ceremonially.
7. A fire burning under the kitchen range. *Tsao*: kitchen range.
8. A burning flame above the capital palace.
9. A burning flame, over fire, above the capital.
10. Two fires and a flame above the capital, probably signifying the awe and majesty of the palace. *Hsia*: to fear.

C 1. Two ceremonial vessels, two hands, and an oracle symbol. *Chao*: to call, or summon or invoke.
2. Wine vessel held in two hands, with a good omen or spirit. *Fu:* happiness.
3. A symbol in which a spirit and water are prominent. *Lu:* a favour or gift, prosperity.
4. Two ceremonial vessels and two hands. *An*: a cover of a vessel or tripod.

5. Ceremonial vessel with shield character above it. *Yü*: a basin, a large cup.
6. Two hands supporting a bamboo book, over a good omen or spirit.
7. Oneself, over a ceremonial vessel, with *Yi*, the cyclical character designating the second day of the week, by the side. Would this refer to a purification ceremony performed on the *Yi* day?
8. Hand holding a beater or baton, over a ceremonial object. *Ch'iao*: a club or baton; to knock or strike or beat.
9. An arrow, representing a flame, on a pedestal or symbolic tree; possibly a lamp.
10. Bottle-shaped vessel with cover. *Hu*: a pot, a jug, a vase.

D 1. Two hands holding a vessel, from which steam ascends, above which is the symbol for growing millet. *Cheng*: to steam, to cook vegetables by steaming (as in the winter sacrifice).
2. Two hands ceremonially offering jade, under a roof of probably an ancestral temple. *Wu*: a medium; sorcery; the service of spiritual beings.
3. A ceremonial object or vessel, held in two hands. *Yi*: ceremonial cups or vessels; a rule or law.
4. A bird being boiled in a cauldron. *Hu* or *huo*: to boil, a boiler. Connected with ancient punishment of boiling alive (*Matthews' Dictionary*).
5. A hand net catching a bird. *Lo*: a net.
6, 7, and 8. Ceremonial steamers. Usually in two parts. *Yen*: ceremonial steamers.
9 and 10. Ceremonial vessels, usually for food offerings. *Ting:* ceremonial vessels.

E 1. Dragon-shaped object with *hsin* crest, held in two hands. *Ch'iu*: a young dragon; to wriggle or curl.
2. Dragon-shaped object with *kan* crest, held in two hands. *Ch'iu*: a young dragon; to wriggle or curl.
3. An upright framework supported by two hands. *Yi*: strange; a wonder or miracle.
4. A hand holding a burning torch, probably in the ancestral temple. *Seu*: to venerate the ancestors.
5. A bottle-shaped wine container. *Hu*: a jug or vase.
6. Kneeling transgressor, with both hands in the stocks, by a stream of water. *Tsui-jen*: a transgressor.
7. Kneeling transgressor in prison, with hands shackled. *Tso-lao*: to be a captive.
8. Two kneeling men, with a ceremonial vessel between them. *Ch'ing*: auspicious; good luck; a high official.

9. A barbarian servant, wearing tall plumed head-dress, and with a tail, offering in both hands a vessel with steaming contents. *P'u:* a servant.
10. A ceremonial vessel, probably associated with divine blessing and joy. *Hsi*: happiness.

F 1. Symbol for a ghost. *Kuei*: a disembodied spirit; demon.
2. A ghost carrying club or staff. *Wei*: to fear, to dread; awe.
3. Two kneeling worshippers. *Tsung* and *ts'ung*: cousins; to follow, to obey.
4. Kneeling man, by a symbolic tree. *Shu*: to be erect, like a tree.
5. Kneeling woman, by a symbolic tree. *Shu*: (unknown).
6. A kneeling fire-bearer.
7. A bell (?) with hand holding beater.
8. A symbolic tree, with hand holding beater. *Ku*: a drum.
9. Ceremonial vessel. *Yin*: a sacrifice offered with purity and reverence (*Giles, 13, 234*).
10. A character composed of a ram and an ox. *Yang-niu.*

G 1 and 2. Roof with an omen or spirit under it. *Tsung*: ancestral temple; clan.
3. A mouth inside a house. *Hsiang*: towards; in favour of.
4. A woman inside a house. *An*: peace.
5. A pig inside a house. Probably the pig of sacrifice in the ancestral temple. *Chia*: family, clan.
6 and 7. Ceremonial wine cups. *Chüeh*: wine libation cups.
8. Ceremonial vessel. *Chia*: ceremonial wine container.
9. The sun in a ceremonial vessel. *Wen*: compassionate; to feed a prisoner.
10. Blood in a sacrificial vessel. *Hsüeh*: blood.

H 1, 2, 3, 4 and 5. Different forms of the tenth and last cyclical day stem. *Kuei*: the last of the Ten Heavenly Stems.
6. Pictograph of a tree—branches above, roots below. *Mu*: tree, wood.
7. A tree or wood on a flaming fire. *Liao*: wood fuel for the sacrifices.
8 and 9. Faggots of wood bound together for the sacrifice to the "Above" or Supreme Being, representing GOD, or the sacrifices to God. *Ti*: God, Supreme Ruler.
10. The graph for "large," with a square or enclosure above. *T'ien*: Heaven—a place. In the succeeding Chou Dynasty it was often personified, and used to designate the Deity.

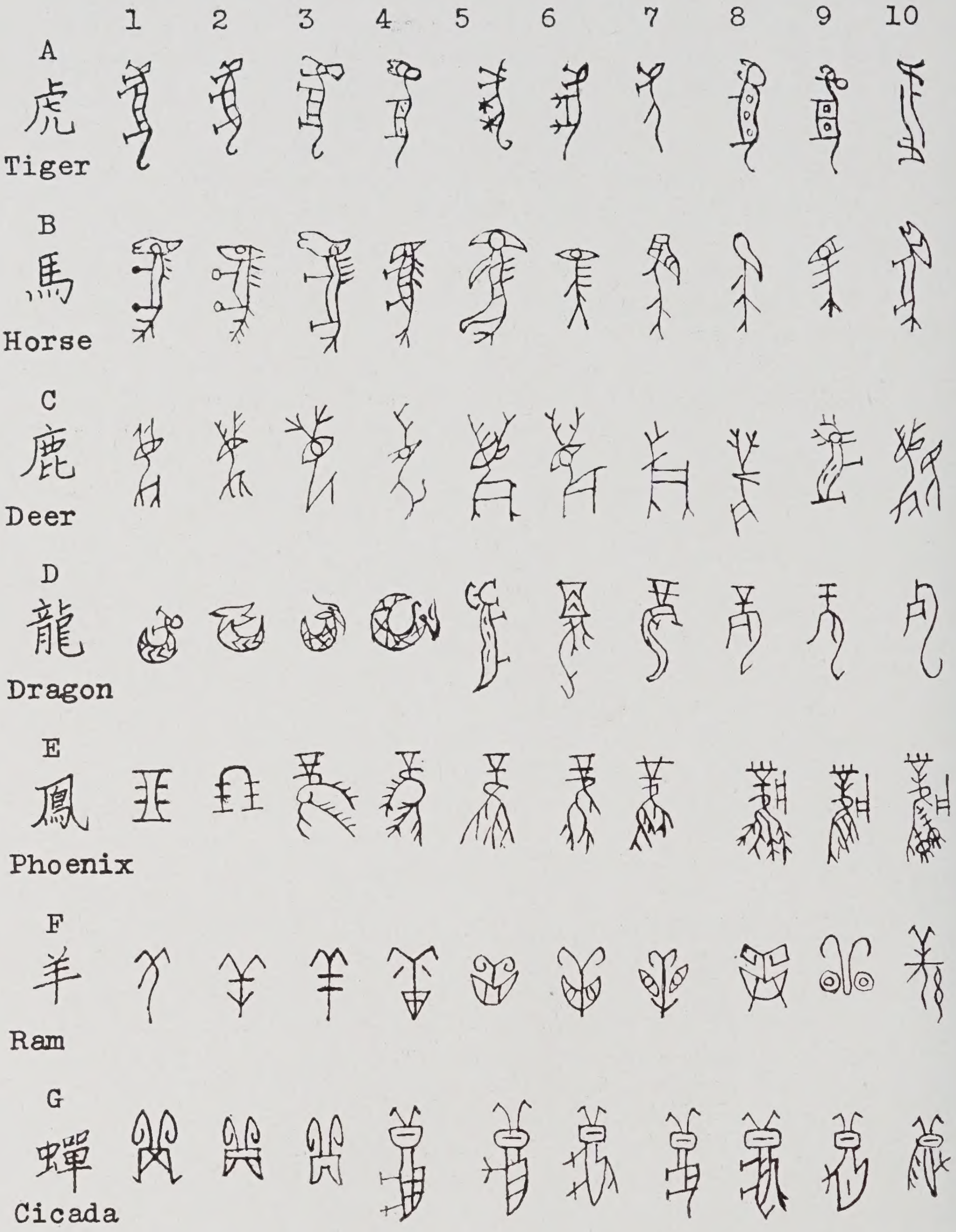

1
2
3
4
5
6
7
8
9
10
A
虎
Tiger
B
馬
Horse
C
鹿
Deer
D
龍
Dragon
E
鳳
Phoenix
F
羊
Ram
G
蟬
Cicada

Illustration 3: Table of Animal Graphs on Oracle Bones.
(C1 above is taken to be a deer of the *mi* species)

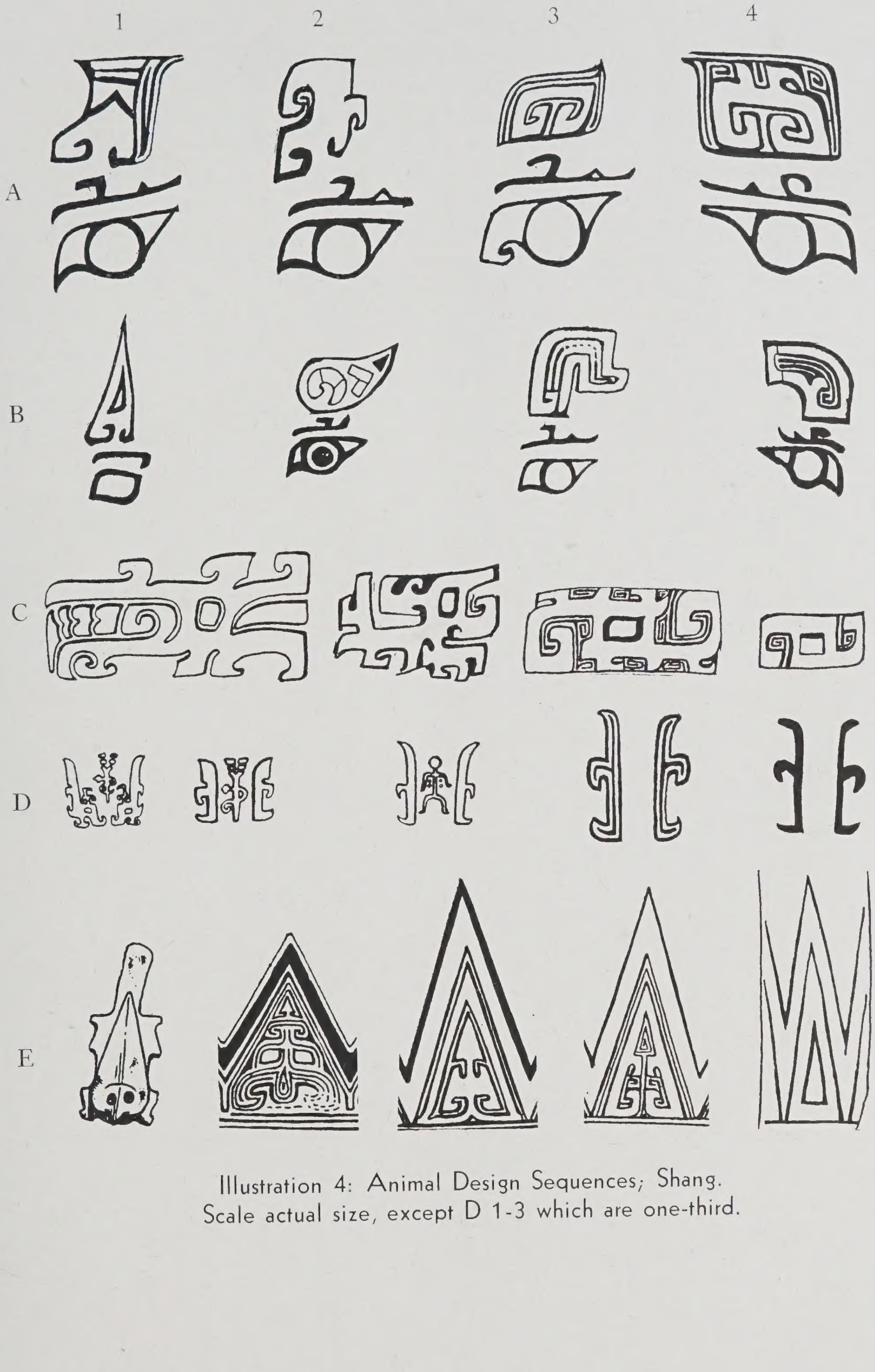


Illustration 4: Animal Design Sequences; Shang.
Scale actual size, except D 1-3 which are one-third.

ANIMAL DESIGN SEQUENCES

ILLUSTRATION 4

The development of Shang animal design is not apparent as a time sequence, but rather as a sequence in form, although the time factor must inevitably have played an important part in its development.

A free naturalistic style is found associated with highly conventionalized forms, with gradations between, and nothing to suggest which may be earlier types, for various types are often found grouped together in the one composition.

The illustration opposite is not intended to suggest development, but to point out a few of the various forms, and to designate the animals which may have provided proto-types for these designs. It must be borne in mind that there is no consistency in associating a certain design with a particular animal, for Shang artists did not hesitate to combine characteristics of different animals or birds in the one animal.

Groups A and B are taken from carved bone objects illustrated in the plates given below. Each depicts an eye, an eyebrow, and a horn or crest or ear of a particular animal.

A1 includes the so-called bottle-shaped horn of a dragon, or of a bovine animal (*Illus. 9: A* and *10: C*). The up-pointed angle on this horn is a convention invariably used to designate the round (*Pl.* XXXV: *B*).

A2 includes a combination type of crest or horn of a dragon, and is found in many variations of form.

A3 and 4 have ears of a feline type, and are clearly recognized in tiger masks (*Illus. 10: B* and *D*). Probably the slanting T meander so common in Shang, Chou, and Han Dynasties takes its origin from the slanting T stylization of the tiger's ear.

The pointed crest or horn of B1 is that of a *k'uei* dragon; that of B2 is the horn of one of the extinct Shang buffaloes, *Bubalus brevicornis* or *Bubalus mephistopheles* (*Illus. 5: C*) and

B3 and 4 show two variations of ram's horn.

Group C are *k'uei* dragons in profile.

Group D shows an interesting development of the *k'uei* dragon into a simple symbol which is very commonly used to fill open spaces. It is found in designs on bone, bronze, jade, stone, and white pottery (*Illus. 6*). The first three pictographs in this group are from three bronze *ko*, and the scale here given is one-third actual size.

Group E shows cicada forms, of which there are manifold variations. These are from bone objects illustrated below, but they are found in decoration on all Shang material (*Illus. 6*, *8*, and *10*).

There is nothing very clear regarding the purpose of the cicada design on ceremonial vessels or objects, except that it seems always to have a beneficent significance as an emblem of good luck, and also is associated with the spirits of the departed. The later use in Han times of a jade or glass cicada placed in the mouth of the corpse at burial was probably a pre-Han practice, but the jade cicadas of Shang were not flat but carved in the round, and this does not suggest they were at that time placed in the mouth of the dead.

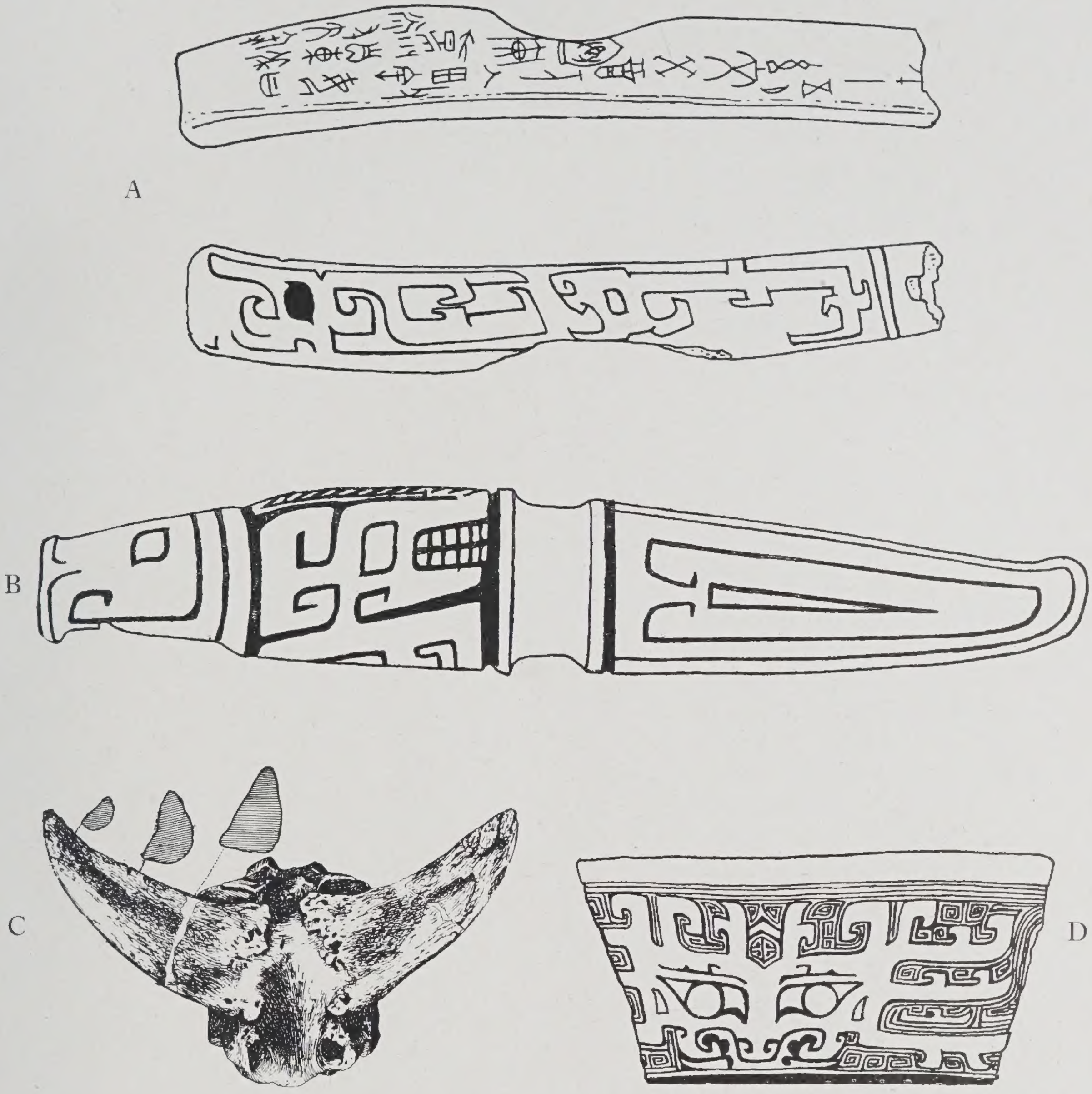


Illustration 5: Various Bone Objects; Shang.

A. Carved bone fragment: Reverse, inscribed;
Obverse, two carved dragons.
B. Carved bone fish-shaped object; probably horse-bit guard.
C. Horn cores of extinct buffalo (*Bubalus*), from Anyang.
D. Carved fragment of whale jaw-bone, Anyang. Stag mask design.

Scale: A and B actual size; D one-half.

A BRONZE DAGGER-AXE

(Actual Size)

This Shang *ko* is in the Royal Ontario Museum, Toronto (NB. 3258).

The design is the same on both surfaces, being a stylized animal mask at the heel of the weapon, and a mask with a tongue extending along the blade.

The mask on the blade is made up of two *k'uei* dragons, with scaly bodies and curled up tails, whose eyes respectively make the two eyes of the mask.

A circular hole perforates the forehead between the ears, which may be ornamental or be used as an extra lashing hole.

A tongue appears to issue from the jaws of the animal, and its decoration is that of three cicadas in line, head to tail.

Filling in the background are stylizations of *k'uei* dragons (Illus. 4: D).

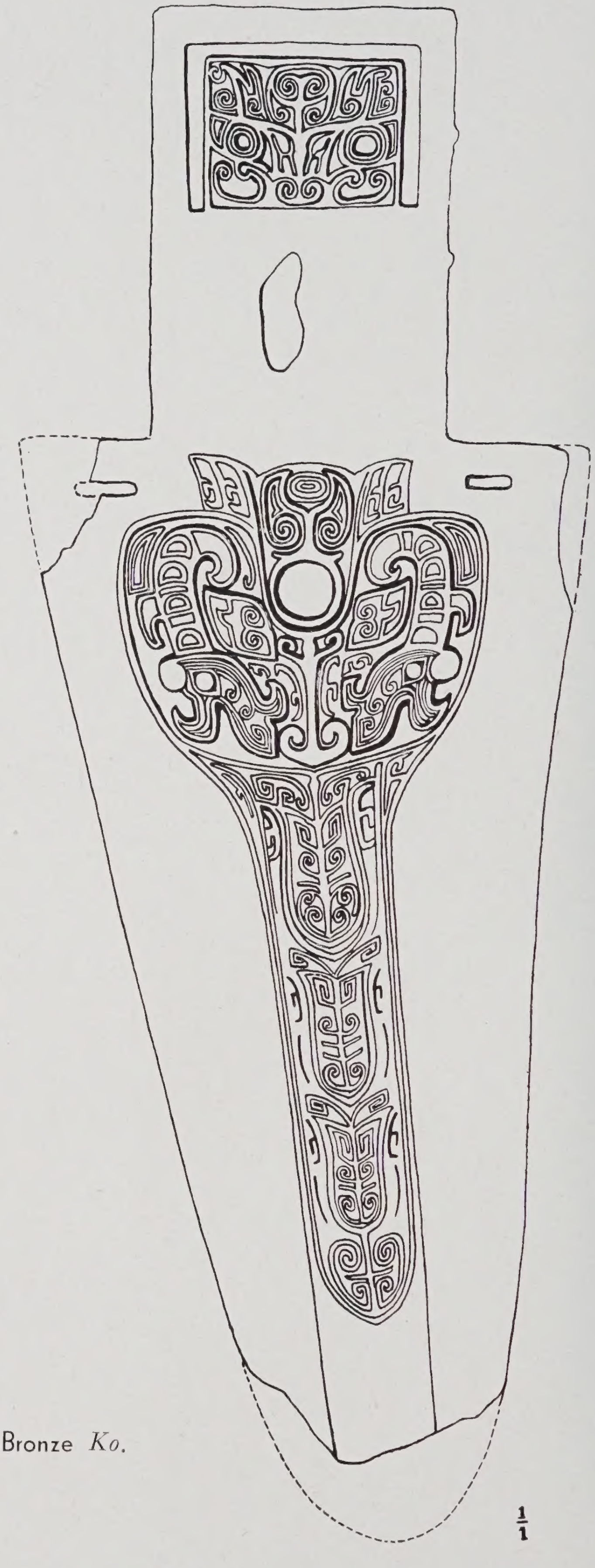


Illustration 6:

Animal Designs on a Shang Bronze *Ko.*

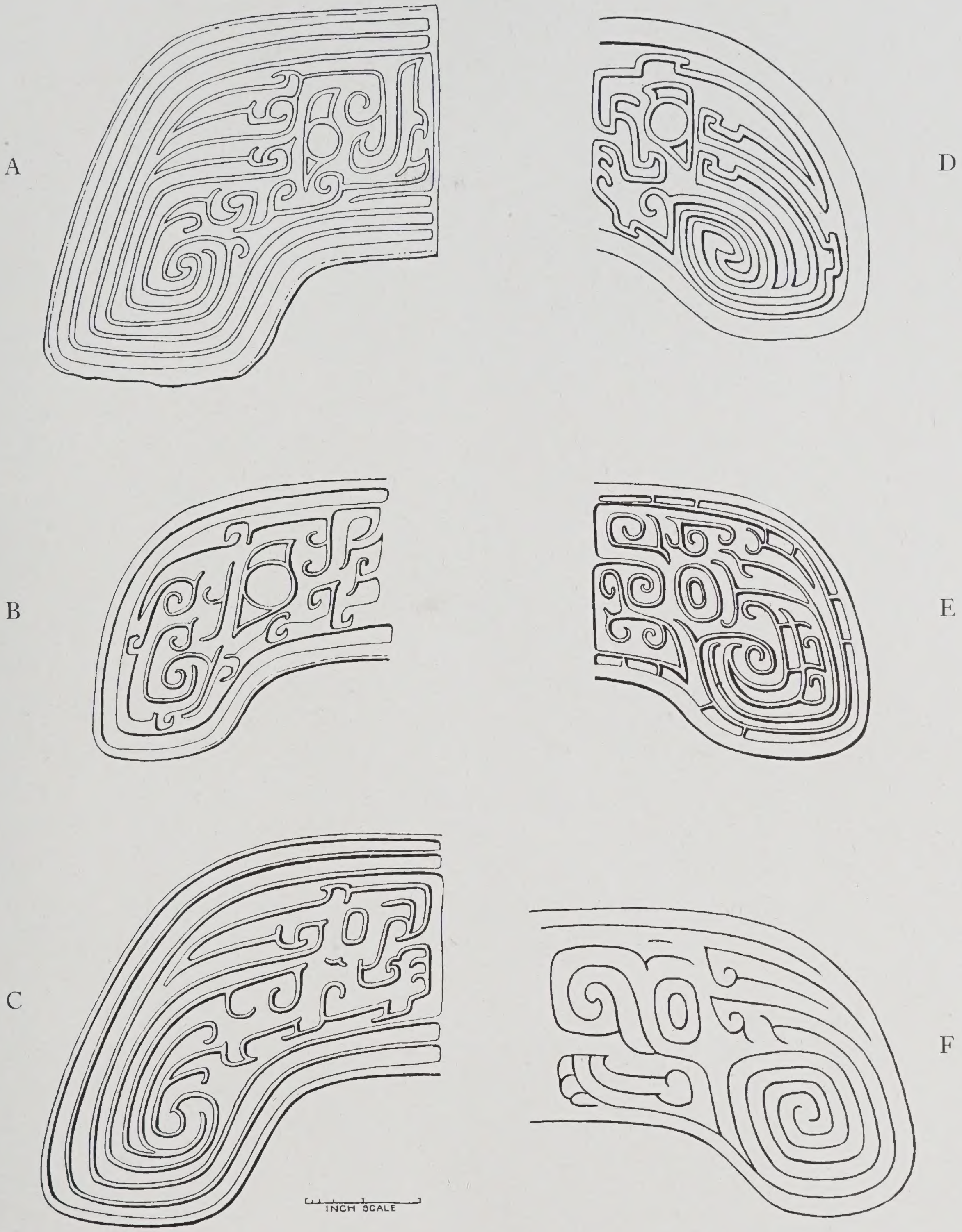

A
D
B
E
C
F
INCH SCALE

Illustration 7: Animal Designs on Six Bronze *Ko*; Shang.
A and B: Toronto. C and D: China. E: Paris. F: Boston.

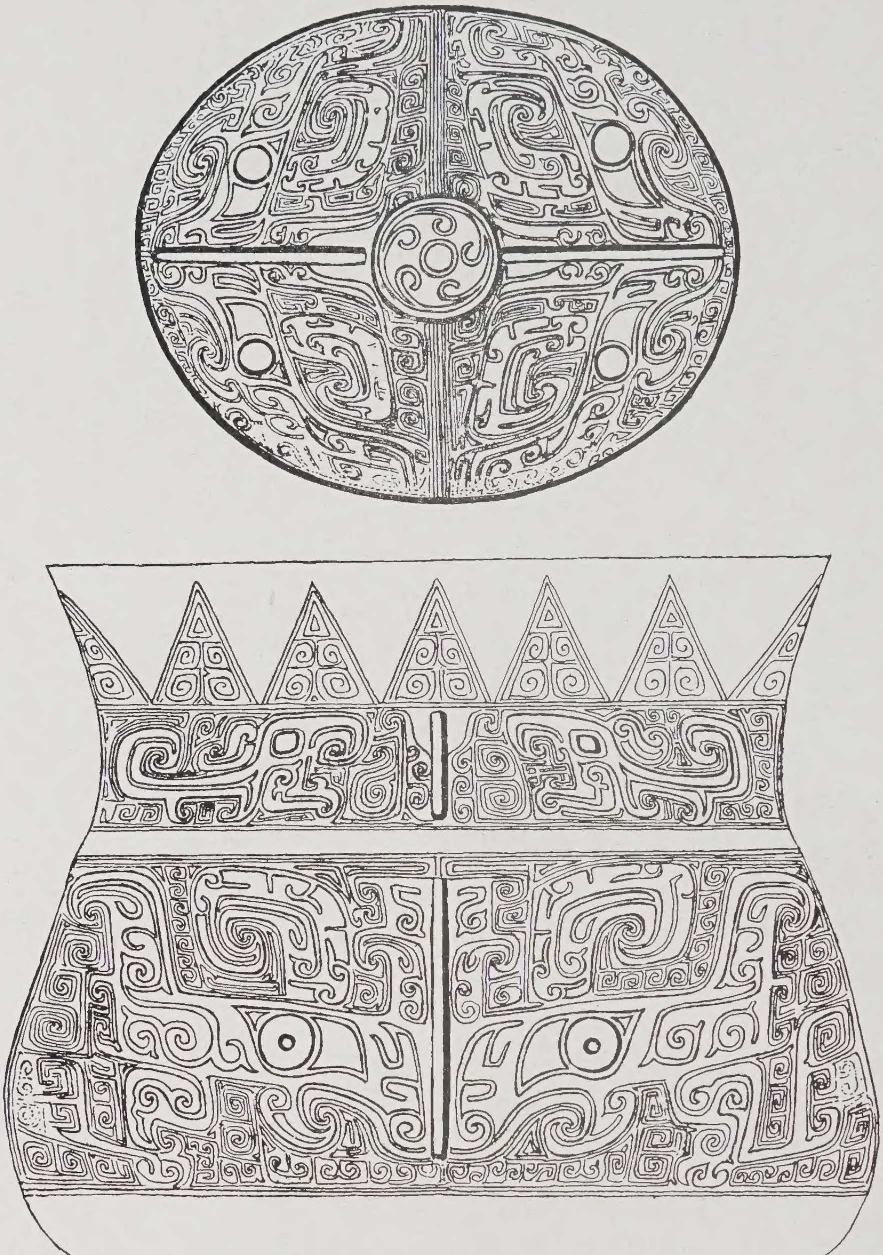
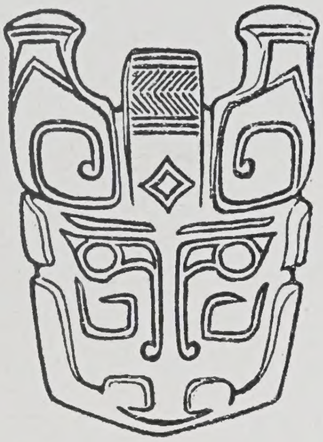


Illustration 8: Bronze Ceremonial Wine Vessel; Shang.

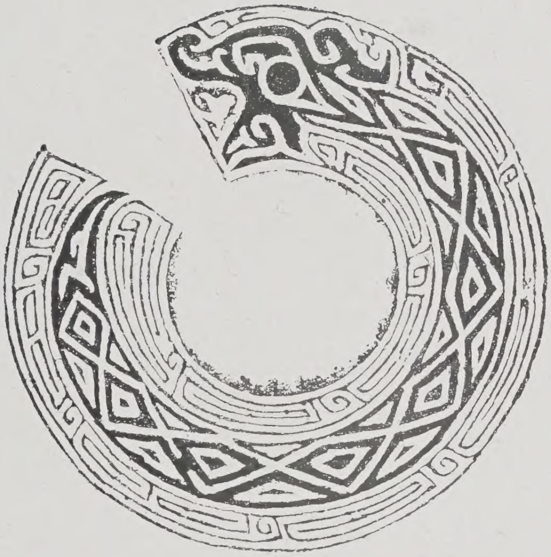
Ram masks on cover and sides, cicadas on top rim zone, bird-form *k'uei* on top second zone and base rim zone. Scale: actual size.

A. Jade mask of a bovine type, with bottle-shaped horns. From the Anyang area, and now in a collection in Japan. Actual size.



A

B



B. Ink-squeeze of *k'uei* dragon design on cover of a white pottery vessel from Anyang, now in a Japanese collection. One-half actual size.

Illustration 9: Jade Mask and Pottery Dragon Design; Shang.

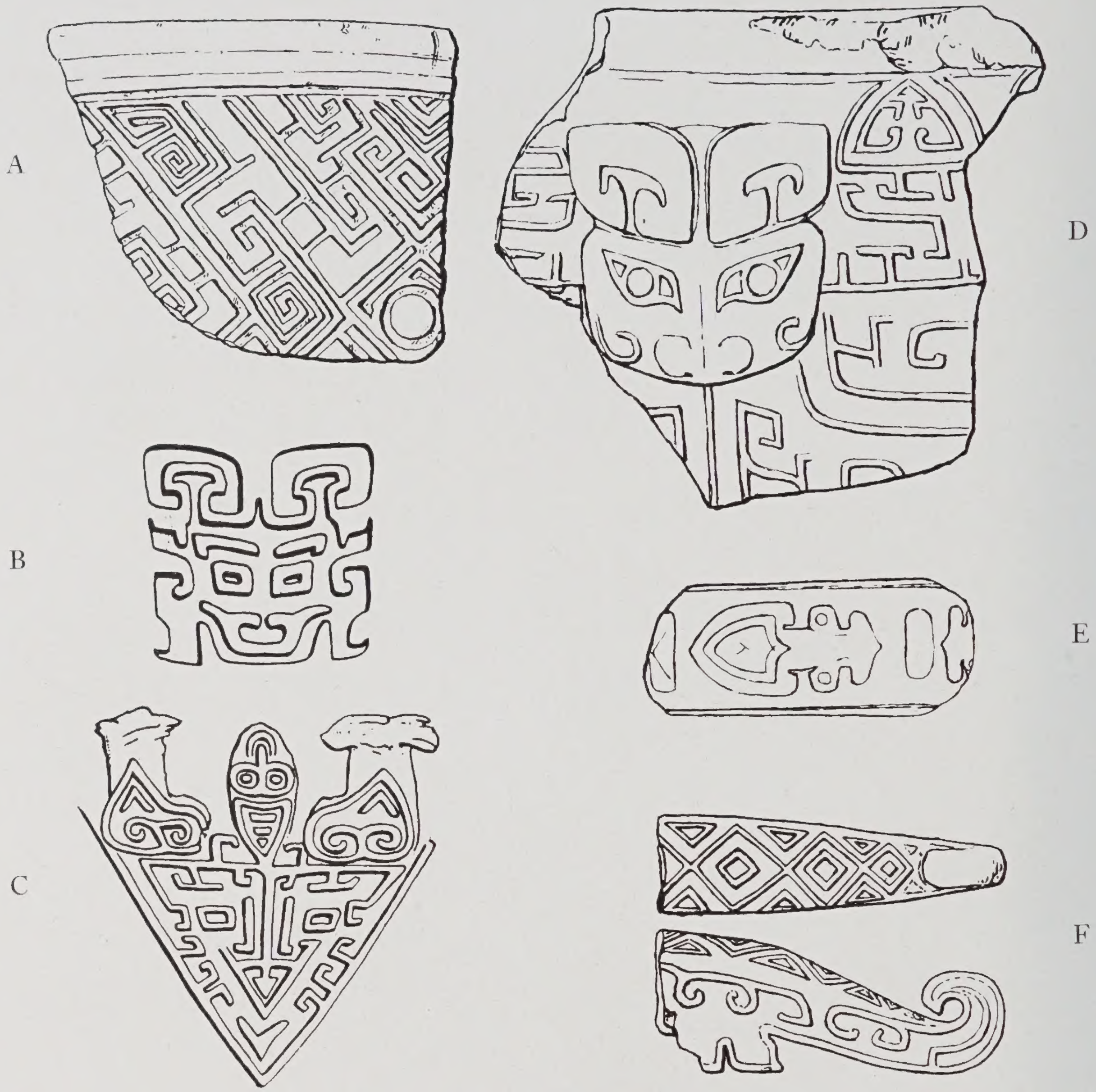


Illustration 10: Animal Design on Shang Objects.: Pottery, Bronze, Jade and Stone.

A. White pottery fragment; highly stylized animal design with circular eye.
B and C. Feline and bovine masks on a bronze *ko*, with cicada between horns of C (Toronto, N.B. 3247).
D and E. Fragments of jade vessel. Feline in relief on D; cicada on E.
F. Tail half of *k'uei* dragon carved in the round in white marble.
These objects were all from Anyang and are now in the Toronto Museum.
Scale: actual size.

PART III

PLATES

PLATES

A. Oracle Bones
B. Spatulate Bones
C. Various Bone Objects
D. Shell Objects

A. ORACLE BONES

THE following are illustrations of a few oracle bones from the collection of the Royal Ontario Museum of Archaeology. The whole collection contains some three thousand pieces, most of them fragmentary and small. They have not yet been indexed or even numbered, and the specimens which have been transcribed and illustrated here, have been selected at random, with a view to manifesting styles of script and character of material of the two main groups of these inscribed bones, namely animal scapulae and tortoise shells. The illustrations are all drawn to natural size except where otherwise stated.

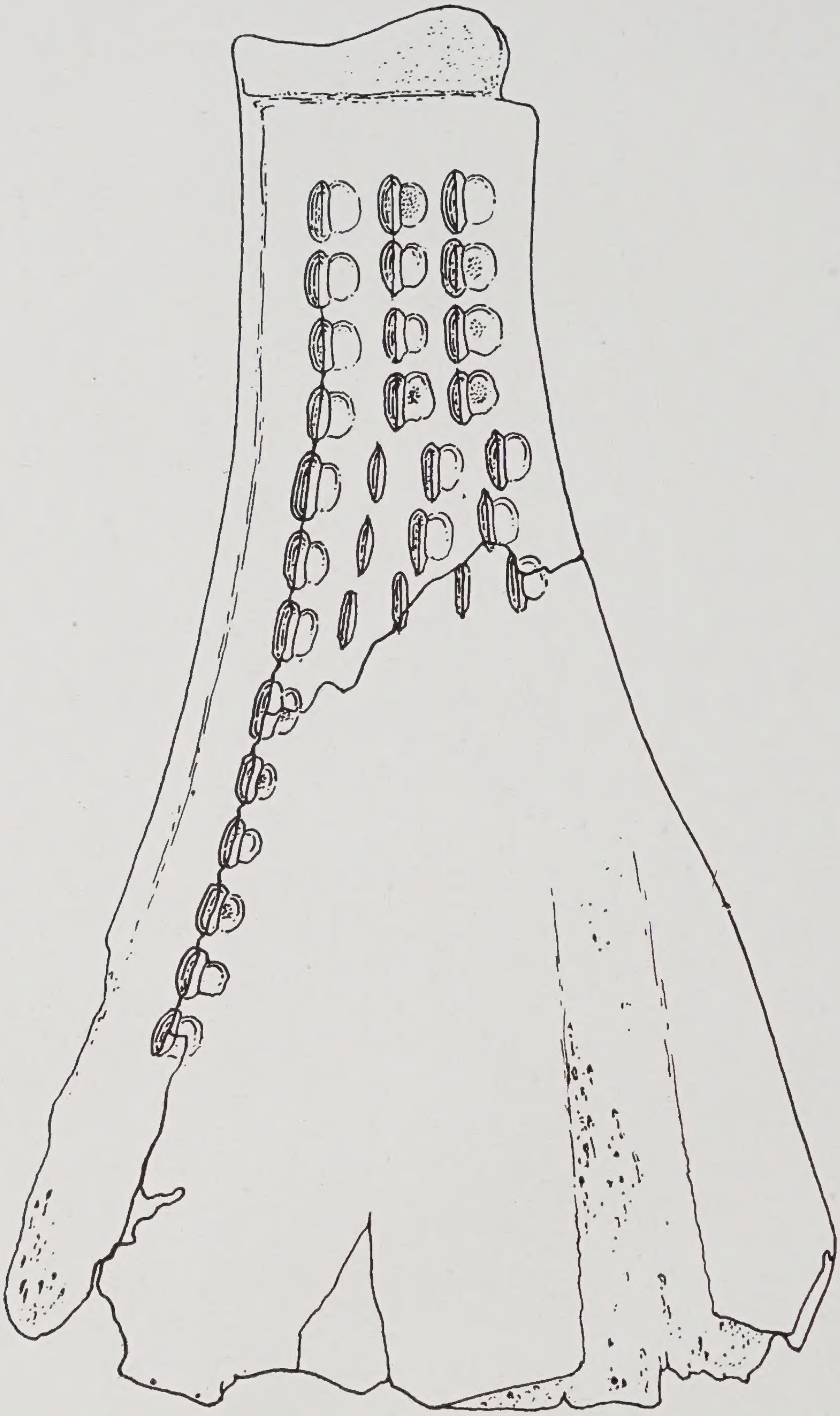
The designation symbol for this collection is "To." for "Toronto," numbers 001 to 999 being reserved for the scapulae specimens, and numbers 1000 to 2999 for the plastra. Where obverse or outside, and reverse or inside surfaces are to be indicated, the use of "a" and "b" respectively will be added to the number; and for the socket end of the scapula the letter "c" will follow the number. Where carapace is indicated as distinct from plastron the letter "c" will precede the number.

Scapulimancy was probably the original source of oracle bone technique, but the use of tortoise shells as well as scapulae, for the same purpose, was apparently a common practice among the Shang peoples.

The great quantity of these inscribed bones that has come to light over a small area, and the wide range and high standard of literary content of the inscriptions, suggest a long period of previous development, a high level of cultural life, and a strong probability of discoveries to come in other areas and of earlier stages of development.

Students of Shang bone script have found it necessary to be on their guard, for local exploiters in the Anyang area have forged incised script on genuine, though uninscribed, Shang bones, and sold them to the uninitiated for large sums. The result is that false inscriptions are constantly coming to light, even in the most carefully gathered collections. False inscriptions may be detected

PLATE I



Scorched Scapula. To. 001b.

by the edges of the incisions, which may be rough instead of smooth as they are when cut in green bone; by inaccuracies in the forms of the characters; by their misuse in sentence composition; and especially by glaring errors due to inversion of single characters, or even whole sentences or inscriptions. The counterfeiters did not know the meaning of the script, and were ignorant of the canons which governed the Shang diviners in their divination technique.

I. ANIMAL SCAPULAE

Plates I-VIII

Plate I. To. 001b. Scorched scapula. Scale 1: 2.

This right shoulder scapula is complete, except for the longitudinal ridge on the reverse, which has been removed, and half of the socket which has been sawn off on the reverse side. These two operations were the usual pre-divination treatment of the scapula which not only produced a tablet effect, but made it more suitable for stacking in the archives.

This scapula has no inscription whatever. On the reverse surface thirty-one lentoid cavities have been cut, of which twenty-six have been scorched and five have not been touched. On the obverse surface the branched cracks correspond to the scorched cavities.

A comparison of many scapula specimens so far reveals the fact that right shoulder scapulae are scorched to the right of the cavities as in this case, and left shoulder scapulae are scorched to the left of the cavities.

Plate II. To. 002b. Scorched scapula. Scale 1: 1.

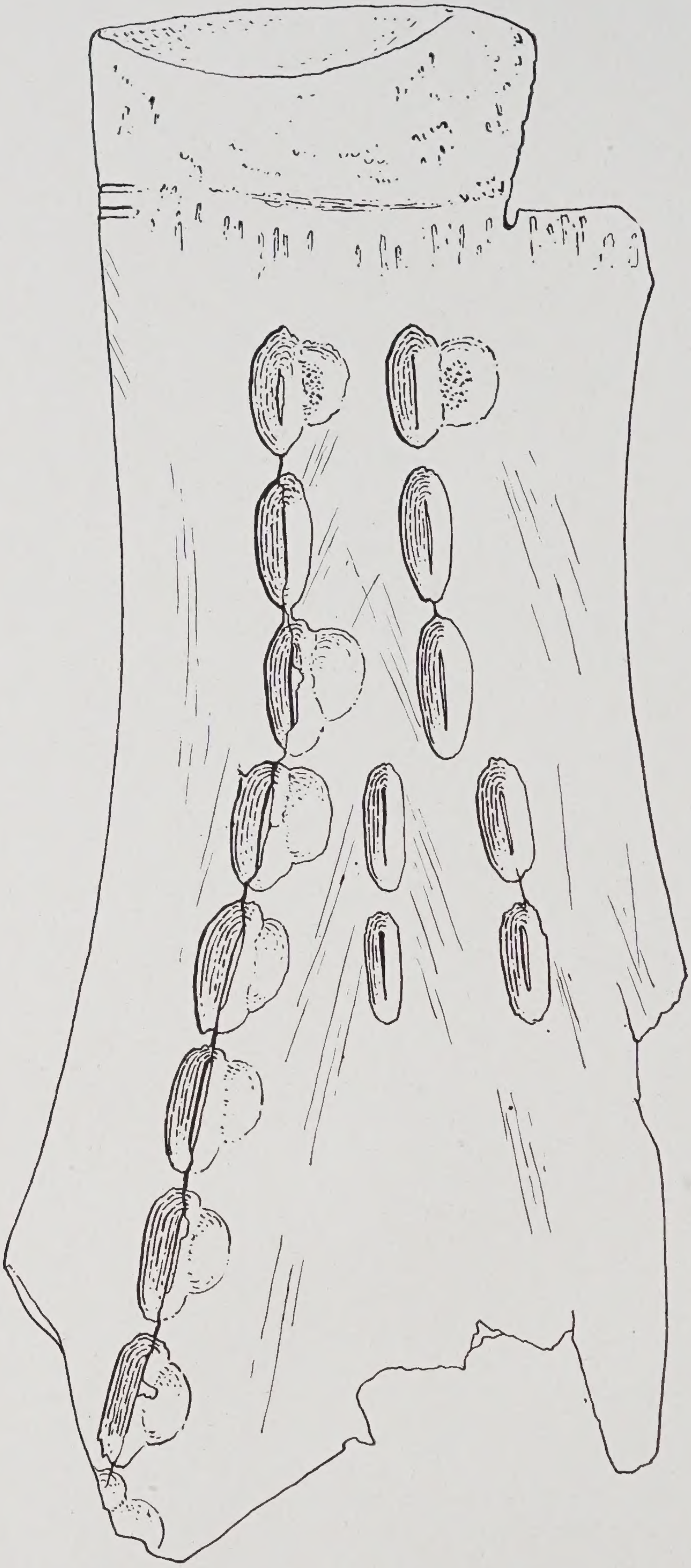
Reverse surface of right shoulder bone; lower part missing; sixteen oracle cavities remaining of which all but seven have been scorched; marks of filing and scraping evident on the surface. Two parallel marks are sawn on the upper left-hand margin, which may be the numeral designation for two.

Plate III. To. 002a. Scorched scapula. Inscribed.

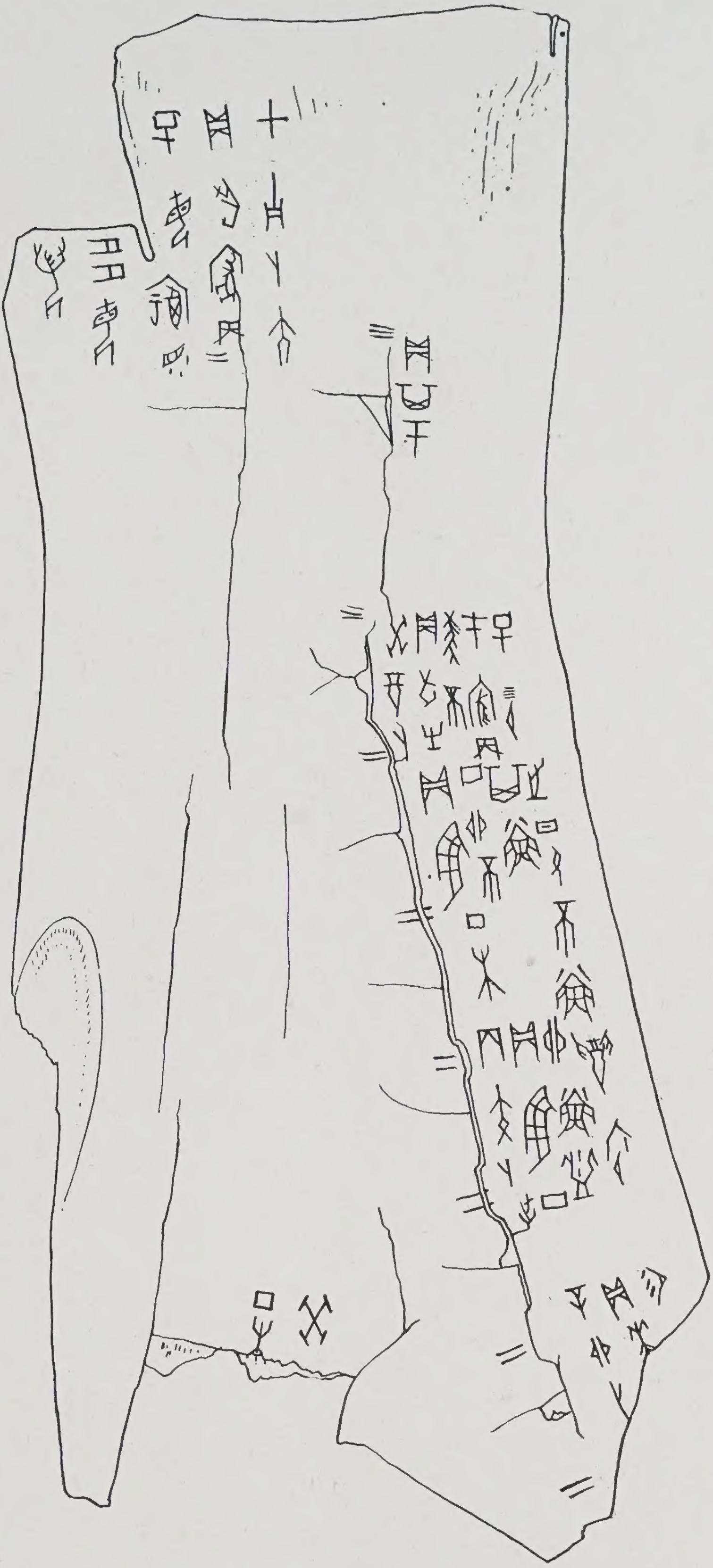
Obverse surface of right shoulder bone, To. 002. The vertical cracks follow the line of the cavities on the reverse surface, but lateral cracks correspond only with the scorched cavities. Of these there are nine and each is numbered, seven being number "two" and two being number "three." There is no number "one," but this may have been on the lower part of the bone now missing.

Inscriptions on scapulae usually begin at the bottom or fan-shaped end, and are recorded separately in ascending sequence. Each inscription is usually written in vertical columns of characters beginning above and descending, and the columns may read from left to right, or right to left.

PLATE II



Scorched Scapula. To. 002b.



Inscribed Scapula. To. 002a.

The inscriptions on this bone, with the exception of that in the upper left-hand corner, all appear to read column by column from left to right. The inscription in the lower right-hand corner, which is incomplete through a missing fragment of bone, reads from the left that on the *hsin mao* day it was divined concerning the growing crops. This inscription is completed in what appears to be a parallel record, To. 006.

The other inscriptions above this contain pictographs relating to fishing, to ablution and ceremonial vessels, as well as cyclical dates of days, and number of months (*cp.* To. 006a).

Plate IV.

To. 003a. Scorched scapula.

Fragment of the socket end of a right shoulder scapula. The reverse surface has no inscription, and but one scorched cavity, indicated on this obverse surface by the lateral crack. The inscription on the obverse surface seems to have a suggestion of an execution or of a punitive expedition. It reads from right to left. The upper edge of the socket has two saw cuts, and the concave half-socket has incised pictographic marks of unknown meaning (*cp.* To. 003c).

To. 003c. Socket end of scorched scapula, To. 003.

The incised markings may have to do with some index system of sequence.

To. 004c. Socket end of scorched scapula, To. 004.

The incised characters of this socket also may be index markings.

Plate V. To. 005ab. Scorched scapula.

Fragment of left shoulder scapula. The reverse surface has five lentoid cavities all of which have been scorched; and file marks are evident, as well as a prominent raised ridge suggesting a similarity to the ridges on the ceremonial spatulas illustrated below.

The obverse surface has the usual cracks with laterals, in reverse from those on right shoulder scapulae, and one complete inscription, and part of a second inscription.

The style of the script, and in particular the character for king, *wang*, would suggest an early dating, probably the Wu Ting period or earlier (1339-1281 B.C.).

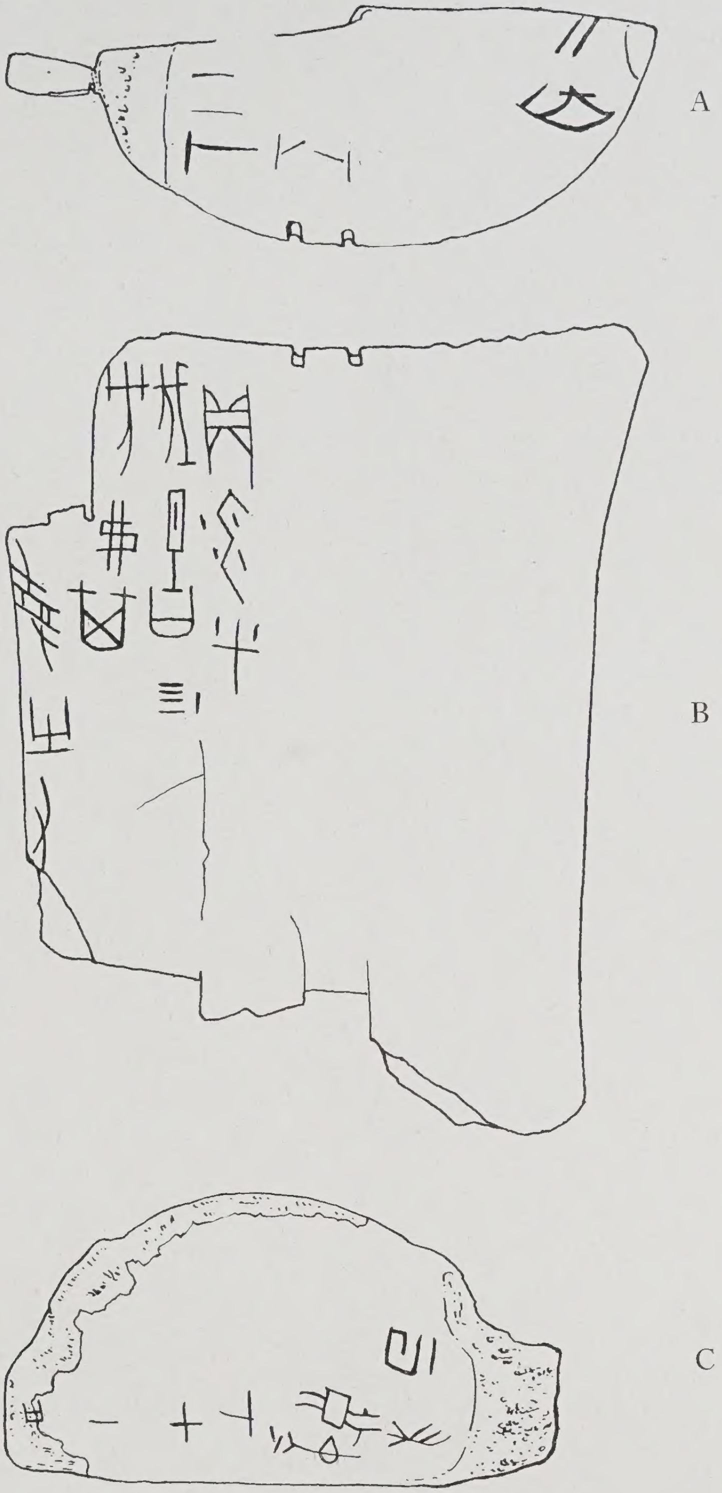
Plate VI.

To. 006a. Scorched scapula.

Fragment of a right shoulder scapula. There is no script on the reverse, and no complete cavities, for the bone has broken away along the line of the vertical cavity cracks.

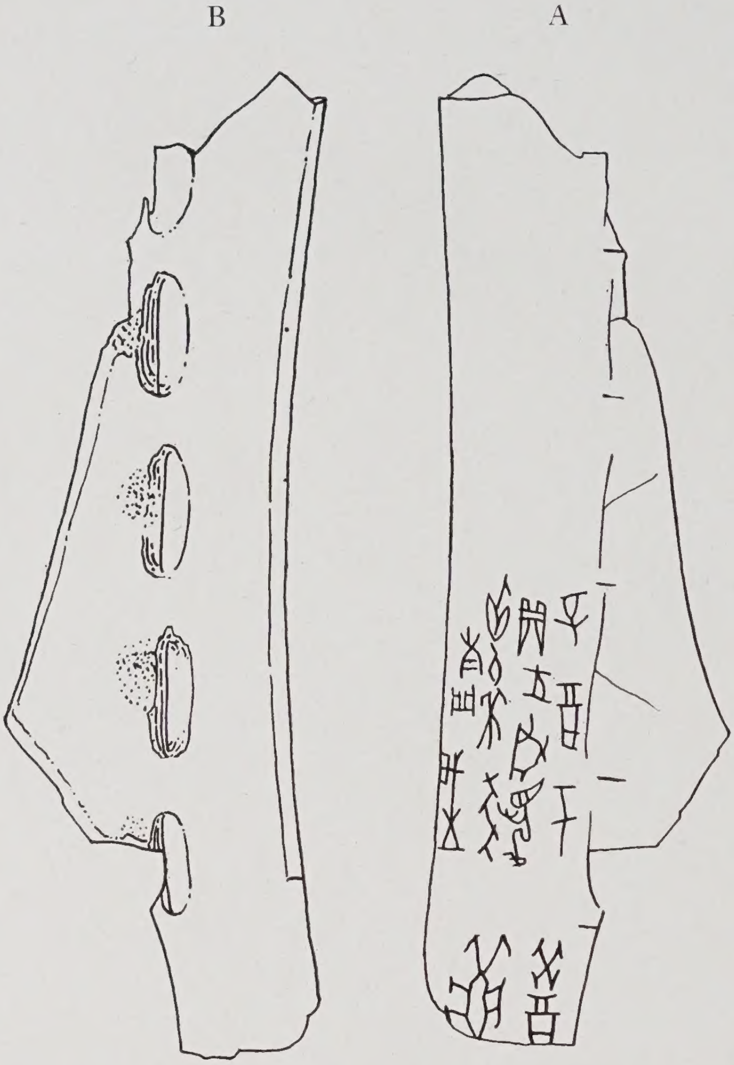
The inscriptions from the centre to the top are remarkably like the lower inscriptions of the scapula To. 002, and might well be parallel records of the

PLATE IV



Scapula Socket Ends.
A. To. 003c B. To. 003a C. To. 004c

PLATE V



Inscribed Scapula Fragment. To. 005ab.

same divinations. They relate to the crops, to fishing, and to ceremonial offerings.

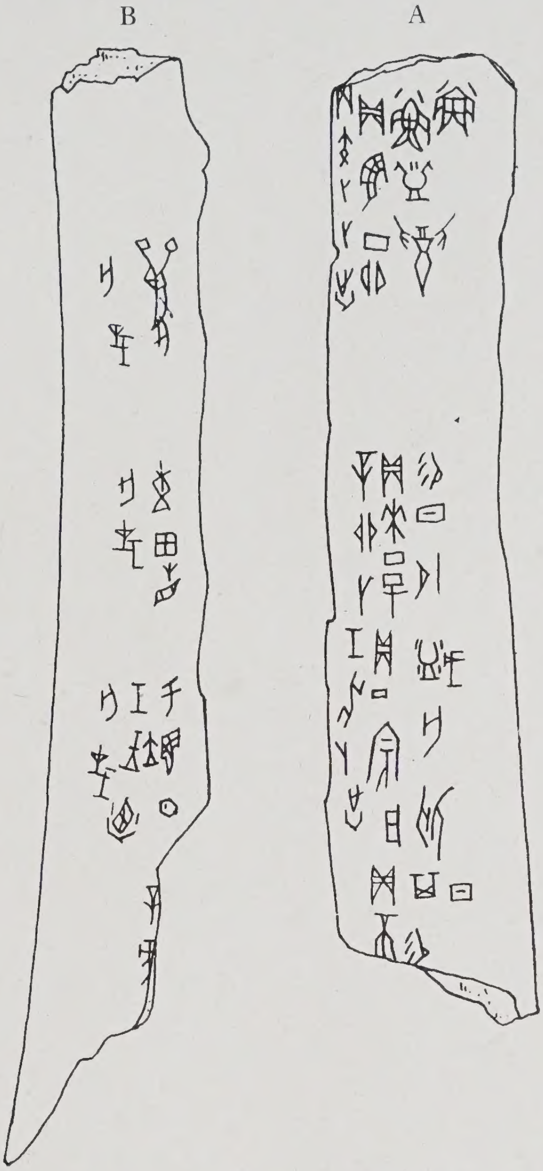
To. 007a. Scorched scapula.

Fragment of a left shoulder scapula. As with the preceding fragment there is no script on the reverse surface, and no complete cavities remain.

Three brief but complete inscriptions are incised on the surface, and parts of two characters of a fourth inscription at the bottom.

The three inscriptions all have to do with hunting, and three different methods of hunting are here mentioned.

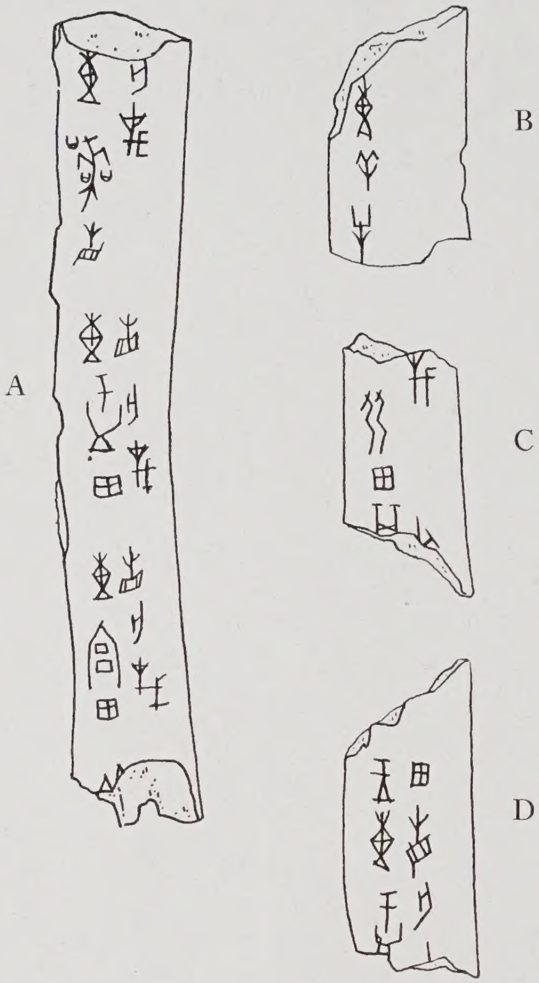
PLATE VI



Inscribed Scapula Fragments.

A. To. 006a B. To. 007a

PLATE VII



Inscribed Scapula Fragments.
A. To. 008a B. To. 009a C. To. 010a D. To. 011a

The lowest of the inscriptions, which is the first in sequence, inquires concerning the king if he should hunt by pitfall on the morrow which is the *jen* day. "No mishap" is the oracle's response.

The central inscription asks about a proposed field hunting and inspection tour, and again the reply is favourable—*wu tsai*—"no mishap."

The upper inscription gives one character—*shou*—now meaning "wild animals," but in Shang times it was a very comprehensive word for hunting. It is composed of a bolos, a net for field hunting, a dog and a hand. The response in this case also was "no mishap."

Plate VII.

To. 008a. Scorched scapula.

Fragment of a right shoulder scapula. There is no inscription on the reverse, and no complete cavities remain.

The three inscriptions on the obverse surface all have to do with inspection visits and hunting, and the response in each case is *wu tsai*—"no mishap."

To. 009a, To. 010a and To. 011a. Scorched scapulae.

These three fragments are probably from one right shoulder scapula, for the colour and character of the bone are the same. They may possibly be fragments with To. 008 of the same scapula.

The inscriptions also deal with visitation and hunting.

Plate VIII.

To. 012ab. Scorched scapula.

Fragment of a right shoulder scapula. The reverse surface shows strong filing marks, and a charred spot opposite the lateral crack.

The inscription has only six characters—*kuei yu chen hsia pu chih.* The pictograph of the cicada is read *hsia*, that is "summer," and it is also the character for the Hsia Dynasty or people.

The translation of these could be, "*kuei-yu* (day) it was divined that *hsia* will (or has) not come."

It might mean that an expected visit of the Hsia people would not eventuate, or that summer, *hsia*, had not yet come, in which case it would have an agricultural significance.

To. 013a. Scorched scapula.

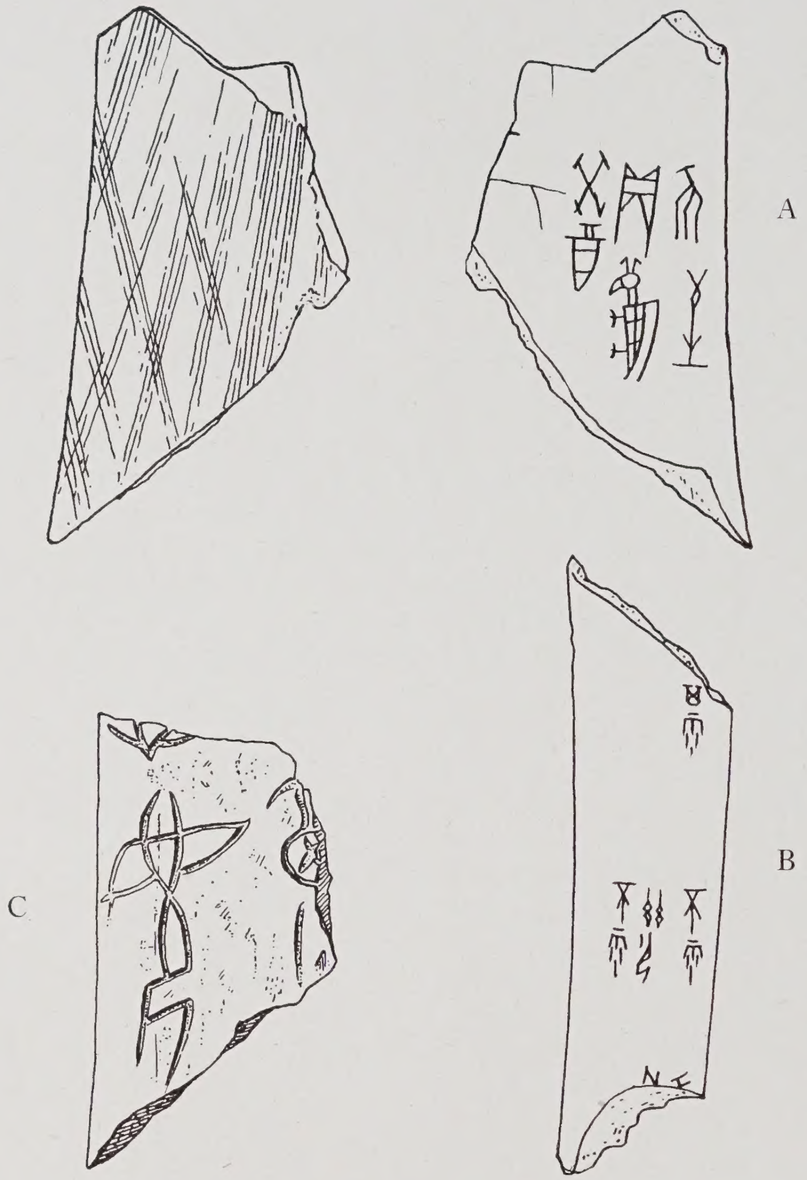
Fragment of left shoulder scapula. The inscription has to do with rain. The two lower right characters say that it will not rain—*pu yü*; the two characters immediately above them say it will rain—*ch'i yü.*

To. 014a. Scorched scapula.

Fragment of left shoulder scapula. Of the inscription, one character only is complete—the character for "woman," and it is very large. This large script is usually taken to be of early date.

Red pigment has been smeared in the lines of this inscription.

PLATE VIII



Inscribed Scapula Fragments.
A. To. 012ab B. To. 013a C. To. 014a

II. TORTOISE SHELLS

Plates IX-XIV

The tortoise shells were given the same preliminary preparation as the scapulae, and the divination procedure and the nature of the script and their content were also the same. The one difference lay in the nature of the tablet material, for the symmetry of the tortoise shell allowed of a more balanced arrangement for scorching and recording, than did the scapula. Tortoise shells seemed to have been more in favour for divination, and a greater proportion of those found have inscriptions recorded on them, but scapulae remains are more numerous. Both carapace and plastron of the tortoise shell were used for divination, but the latter much more frequently, and used in entirety, while the former has usually been found in halves.

Plate IX. To. 1000b. Scorched plastron. Complete.

The sixteen cavities, all of which have been scorched, each has its corresponding crack and lateral clearly revealed on the external surface. This example illustrates clearly the rule of symmetrical arrangement of cavities and inscriptions, though only two cavities have regular inscriptions on the obverse surface, both in apposition, one negative and one positive.

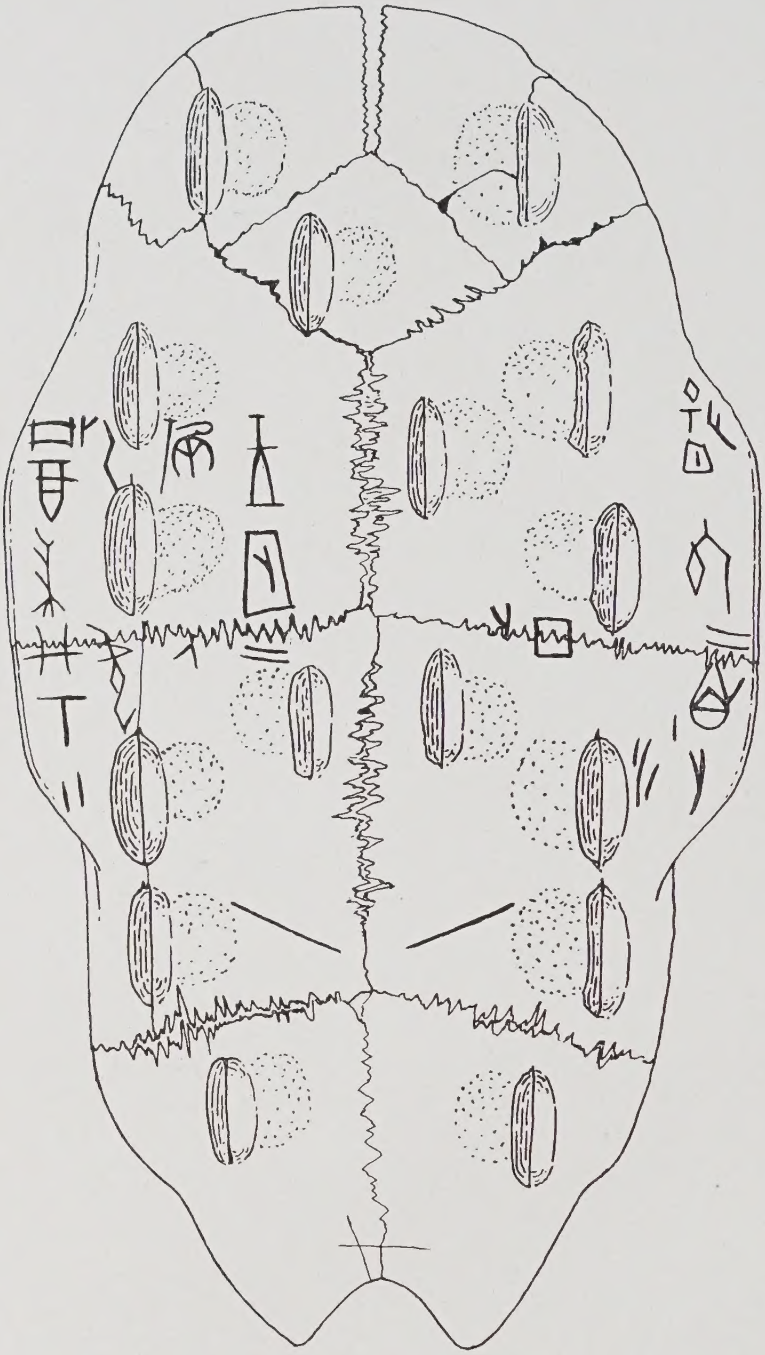
The cavities must be numbered from the bottom, that on the right presumably being number one, and that on the left number two. From this they should be in sequence to the top, so that all on the right half would be odd numbers 1 to 15, and those on the left even numbers 2 to 16.

The characters on this reverse surface are difficult to explain, but there is a reference to divination, by the king, and also the name of "Father Yi," which is found in both inscriptions on the obverse surface, and must be taken as designating Hsiao Yi (1360-1340 B.C.) father of King Wu Ting (1339-1281 B.C.). This plastron would then be related to a divination made in the period of Wu Ting, concerning something associated with his departed father.

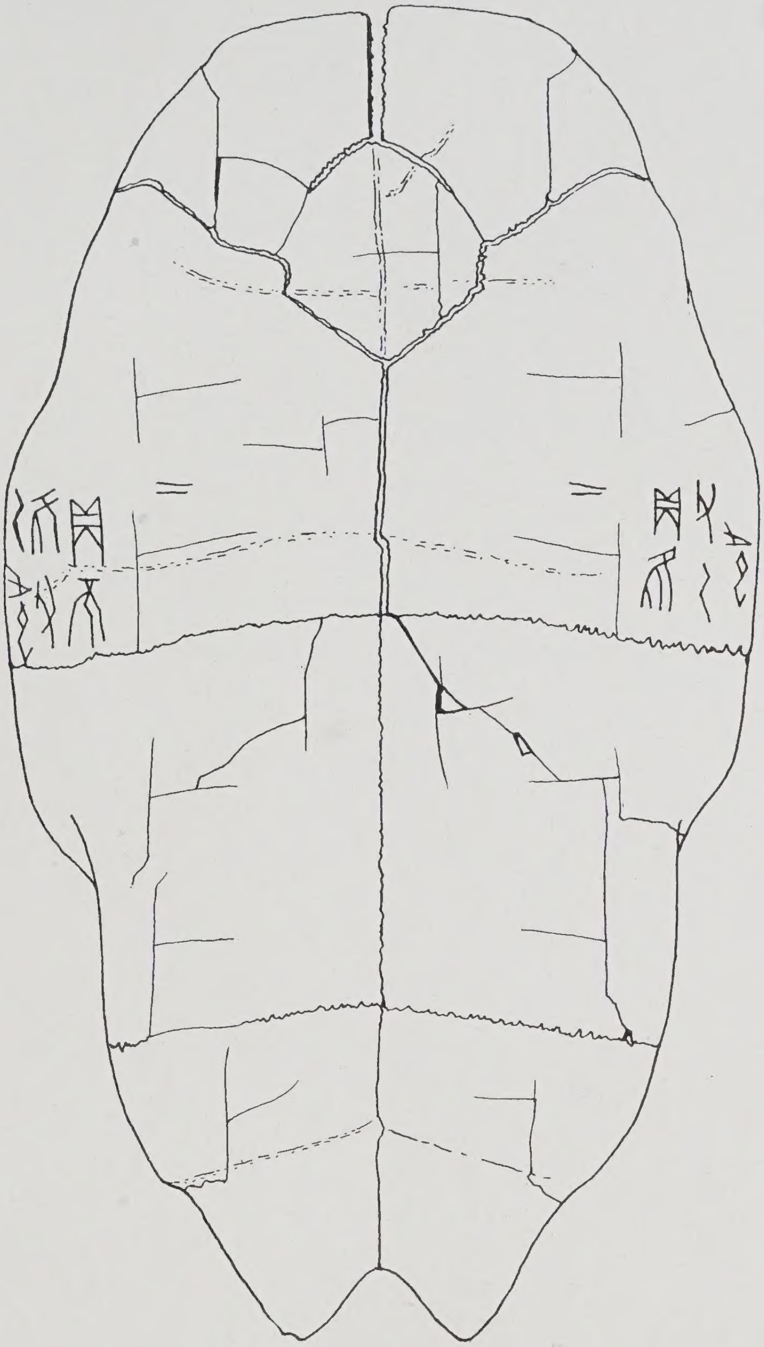
Plate X. To. 1000a. Scorched plastron. Inscribed. Actual size. Complete.

The cracks on the surface correspond with the scorched cavities of the under surface.

There are two brief inscriptions, one on each side of the central zones, and each is numbered "two." The one inscription is concerned with a divination regarding the honouring of Father Yi, that is King Hsiao Yi, the deceased father of Wu Ting the ruling king. The other inscription puts the divination in a negative form, which may possibly be read "should Father Yi not be honoured or regarded?"

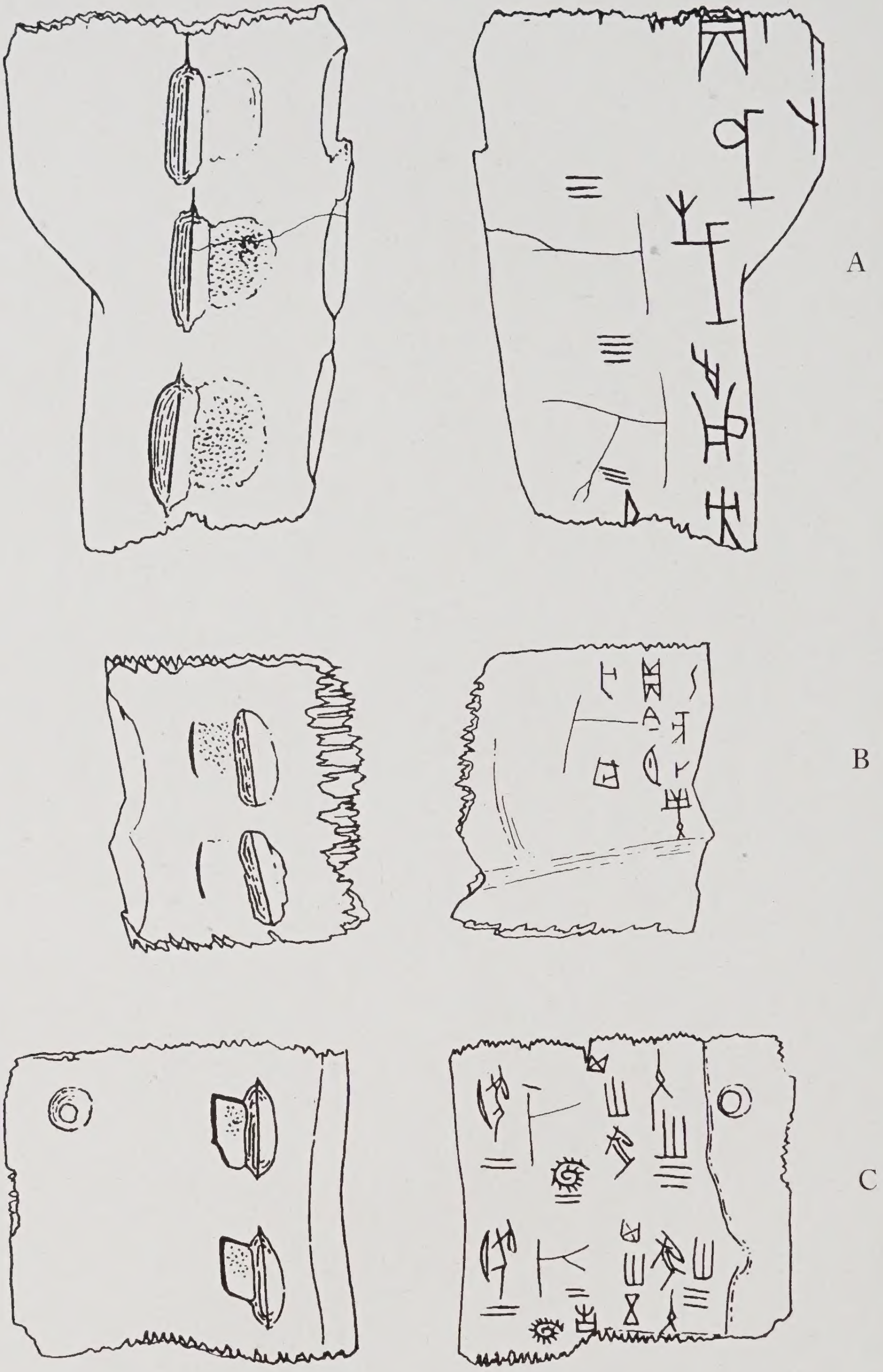


Scorched and Inscribed Plastron. To. 1000b.



Inscribed Plastron. To. 1000a.

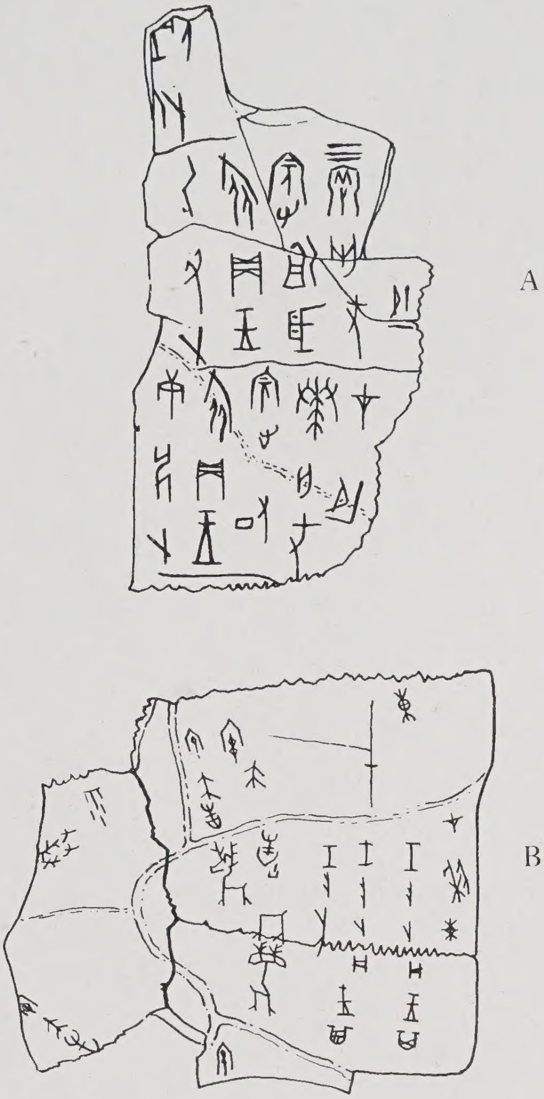
PLATE XI



Scorched Plastron Fragments.

A. To. 1001ab B. To. 1002ab C. To. 1003ab

PLATE XII



Scorched Plastron Fragments.
A. To. 1004a B. To. 1005a

Plate XI.

To. 1001ab. Scorched plastron.

Fragment of left side. Reverse carries three scorched cavities but no inscription. The obverse carries fragmentary inscriptions, numbered "three," "four," and "three."

To. 1002ab. Scorched plastron.

Fragment from right side. Reverse carries two cavities, and the obverse a brief inscription.

To. 1003ab. Scorched plastron.

Fragment from right side. The reverse carries two cavities, and the obverse apparently contains two inscriptions, each dealing with the cyclical "week," with "moons," and with designated numbers of "dogs."

An interesting characteristic of this fragment is that it appears to have been cut into this square shape while still green; and a round hole, bored in one of the corners from the two sides, obviously intended it to be worn as a pendant, or at any rate for purpose of suspension.

Plate XII. Scorched plastron fragments.

A. To. 1004a. There are two inscriptions on this fragment, clearly demarcated by incised horizontal lines, and a part of another inscription at the top.

The complete inscriptions both have to do with ancestral sacrifices, the lower or first mentions the name of Father Ting, and the one above it mentions Ancester Yi. Hsiao Yi was the Ancestor or grandfather, and Wu Ting was the Father, so that a son of Wu Ting was the king responsible for these sacrifices. There were two sons of Wu Ting who came to the throne, the elder of which was Tsu Keng (1280-1274 B.C.) who was succeeded by his younger brother Tsu Chia (1273-1241 B.C.).

B. To. 1005a. The inscriptions on this fragment are not arranged in good order. They have to do with stag hunting by the king, and four pictographs of stags, two only in part, are depicted in the script.

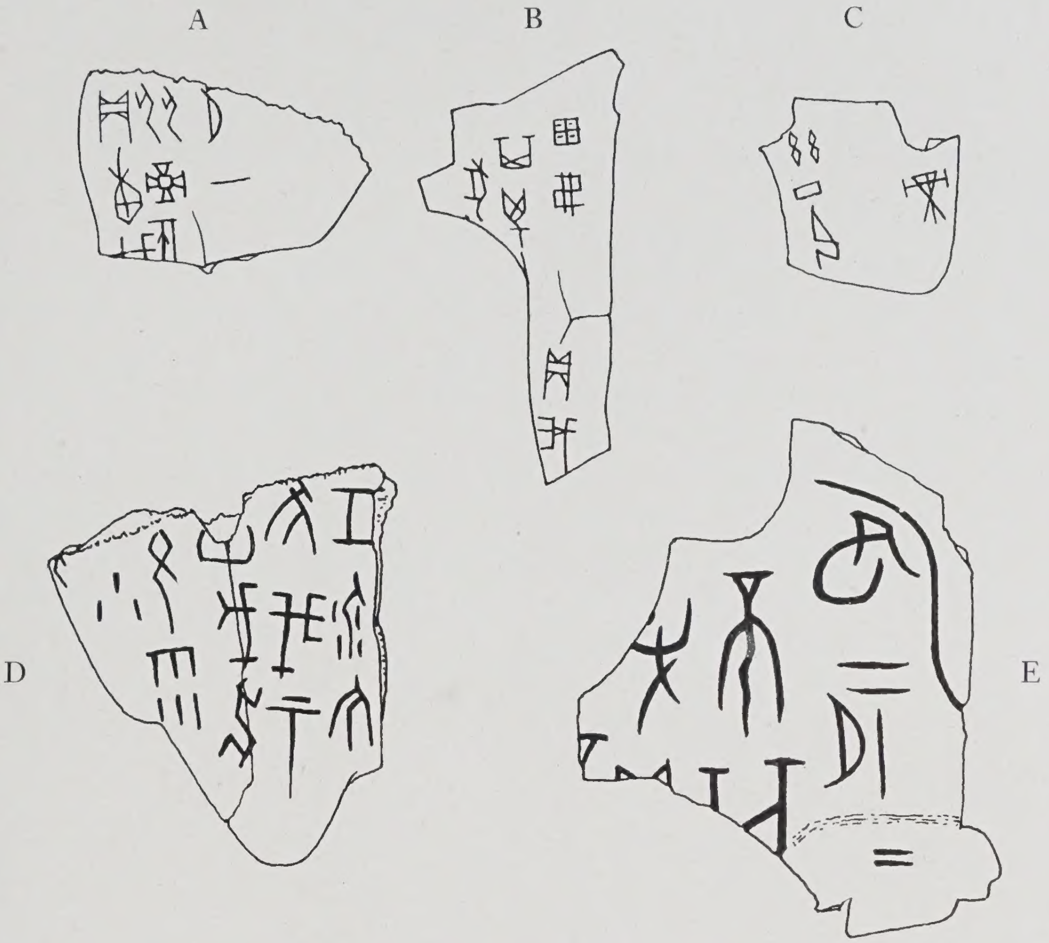
Plate XIII. Scorched plastron fragments.

A. To. 1006a. The central cruciform character is *kuei*, one of the cyclical stems. Variations of this form are many (*Illus. 2: H 1-5*).

B. To. 1007a. The upper right-hand character is *chou*, the name of the Chou Dynasty.

C. To. 1008a. The single character on the right is *Ti*, that is God, or the sacrifice to God (*Illus. 2: H 9*).

PLATE XIII



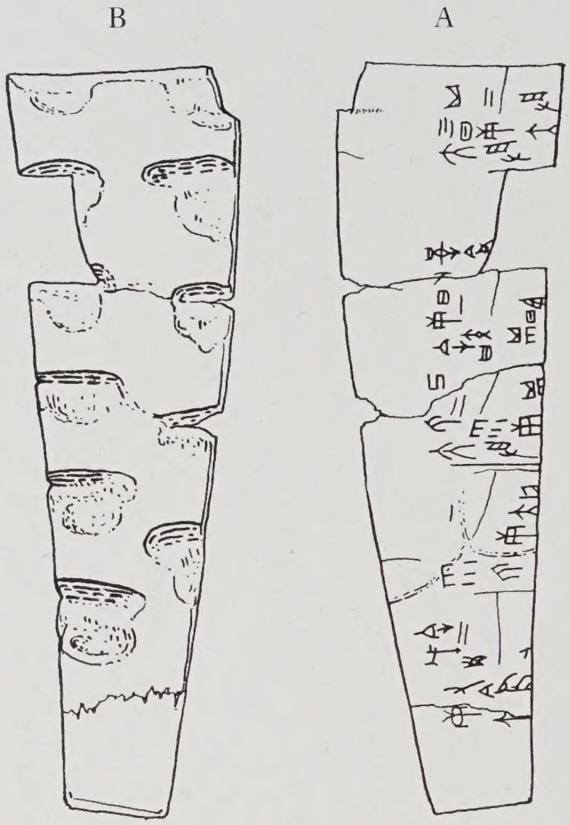
Scorched Plastron Fragments.

A. To. 1006a B. To. 1007a C. To. 1008a D. To. 1009a E. To. 1010a

D. To. 1009a. Encrustations cover the back of this fragment, but in one clear place is the pictograph of a bell with hand holding a knocker (*Illus. 2: F 7*). The characters of this inscription have been traced with black pigment.

E. To. 1010a. The "Twelfth Month" is noted in this inscription. The script has been traced with red pigment, and being larger than usual would probably denote an early period.

PLATE XIV



Scorched Plastron Fragment. To. 1011ab.
A. Obverse B. Reverse

Plate XIV. To. 1011ab. Scorched plastron fragment.

This fragment is from a large tortoise the plastron of which must have been at least ten inches in width.

It is unique in two ways. The form of the fragment is in general that of the spatulate bones or the scapulae, that is wide at one end and tapering narrower at the other. It has been intentionally cut to this form when the bone was green. It is also to be noted that the inscription was ignored and the characters were cut right across. This would suggest that script at that time was not considered sacrosanct as it was later on in China.

B. SPATULATE BONES

THIS group is both extensive and varied in style, and yet the objects conform to certain conventions as to form (*Illus. 1*).

Great numbers of plain spatulas have been found at Anyang, and many of the delicately carved and turquoise-inlaid ones, but the latter are almost entirely fragmentary.

It would appear that they were excavated by unskilled workmen, who discarded the plain ends of the objects, and retained only the carved ends as being more marketable.

They probably ranged in length from about six inches to possibly two feet, or the full length of a rib, for most of them seem to have been carved from animal ribs.

For classification purposes the plates have not been arranged according to the descriptions given in Chapter v above, but in the following four divisions.

I. Reptile design spatulas. *Plates* XV-XXIV.
II. Short, wide spatulas. *Plates* XXV-XLI.
III. Slender spatulas. *Plates* XLII-LVII.
  1. Plain; XLII.
  2. Feline; XLIII-XLVIII.
  3. Ram; XLIX-LI.
  4. Bubalus; LII-LVII.
IV. Long rib spatulas. *Plates* LVIII-LXIV.

A few of these spatulate bones carry incised inscriptions, some of which have been inlaid with turquoise (*Pl.* XV). These inscriptions, both in composition and in style of script, approximate to the inscriptions found on bronzes of late Shang, or of the Shang-Chou overlap, and the evidence seems to warrant a late Shang attribution; probably the period of Ti Hsin (1174-1123 B.C.).

It would also appear that the white pottery and carved jade objects were on the whole contemporaneous with the carved bones (*Illus. 9-10*), despite the fact that one fragment of white pottery in the Toronto Museum carries an incised character for "king" *wang*, formed in the style usually accepted as of the Wu Ting period.

I. REPTILE DESIGN SPATULAS

Plates XV-XXIV

On these bones, apart from masks, cicadas and *k'uei* dragons, there is an animal of lizard-like form which usually dominates the composition, and which is also called a dragon.

Plate XV. Carved bone spatula. NB. 6251. Actual size.

This spatula, which is practically complete, came from Anyang area, and was obtained through Messrs. C. T. Loo, at London, in December, 1935.

It was in poor condition, but the decay has now been stopped and the bone permanently preserved, by saturations of vinyl-acetate solution.

The bone is a rib of an undetermined animal, and the foramen of the thicker end has been brought into harmony with the design carved on the obverse surface.

A. Obverse or convex surface. The designs on this surface are arranged in the conventional three-zone order (*Illus. 1*). At the thick lower end, zone *A*, there is a lizard-like sprawling animal, with head at the tip, and forelegs and claws outstretched on either side. Behind the two eyes is a shield-like scale, followed by a succession of lozenge-shaped scales. The tip of the tail is curled up, and along the right body line is a row of serrations suggesting the long under-belly fur of a hairy animal, in the centre of which appears a cramped stylized limb.

On each side of the head of this animal, filling the vacant spaces, is a *k'uei* dragon. That on the left is hardly discernable, owing to the crumbling of the bone. That on the right is stylized, but complete, and is quite as long as the central animal. It is in profile, and has a round black eye, an open mouth with up-turned snout, a compound horn or crest extending back over the tenuous body, and the tail is curled downwards.

Farther up the section above the central figure are two animal masks in tier, of a feline species.

Above this section, follows the small horizontal zone *B*, in which is the usual stylized *k'uei* dragon in profile, with the single eye in the centre. This is followed by the cicada border, zone *C*, with the plain spatulate end.

The designs on this surface of the bone have been inlaid with turquoise, of which fragments still remain, but the solid black areas designate the deep cuttings from which the turquoise has disappeared.

B. Reverse or concave surface. The thickened ridge, half way along the edge, is characteristic of most of these spatulas, and is always found on the reverse aspect. There is no decoration on this surface, but there is an inscription of which one-half of the characters still retain their turquoise inlay. There are twenty-one characters in two columns, and they are read downward beginning at the top of the left column.

The purport of the inscription is that on the *hsin yu* day the king went hunting in the foothills of the Cock Mountain and was successful in the chase; and at a great announcement at (a certain place the name of which contains the pictograph for tiger) on the tenth month, the royal third year supplementary sacrifice was offered.

We may confidently accept this inscription as designating the year 1172 B.C., which was the third year of *Ti Hsin* (or *Shou Hsin*) the last king of Shang; and the styles of script and composition both corroborate this attribution.

Plate XVI. Carved bone spatula. NB. 3069. Two-thirds actual size.

This complete specimen, made from the rib of an animal, is about a foot in length, and differs from the usual spatulas in the fact that the obverse aspect is on the inner or concave surface of the bone, and also that no thick ridge is carved along one edge of the reverse aspect. This latter omission is due to the difficulty of carving such a ridge on the rounded outer surface of such a flat bone. There is no inscription on this bone, and no inlay of turquoise; neither is there a perforated foramen as in the previous specimen.

A. Obverse and concave surface. The lower zone *A* has a lizard-shaped animal with scales and under-belly fur, similar to the previous specimen, but forelegs and small *k'uei* dragon are not shown. There is but one animal mask above it, that of a bovine type with horns of the *Bubalus* or buffalo.

The central zone *B* has a *k'uei* dragon in profile, depicted very naturalistically, with single eye and crest above it, body scales, two legs with claws, and a small curled tail. Over the back of the animal is the symbol of a *k'uei* (*Illus. 4: D*).

The upper zone *C* has the usual cicada border (*Illus. 4: E*) with the rest of the zone quite plain.

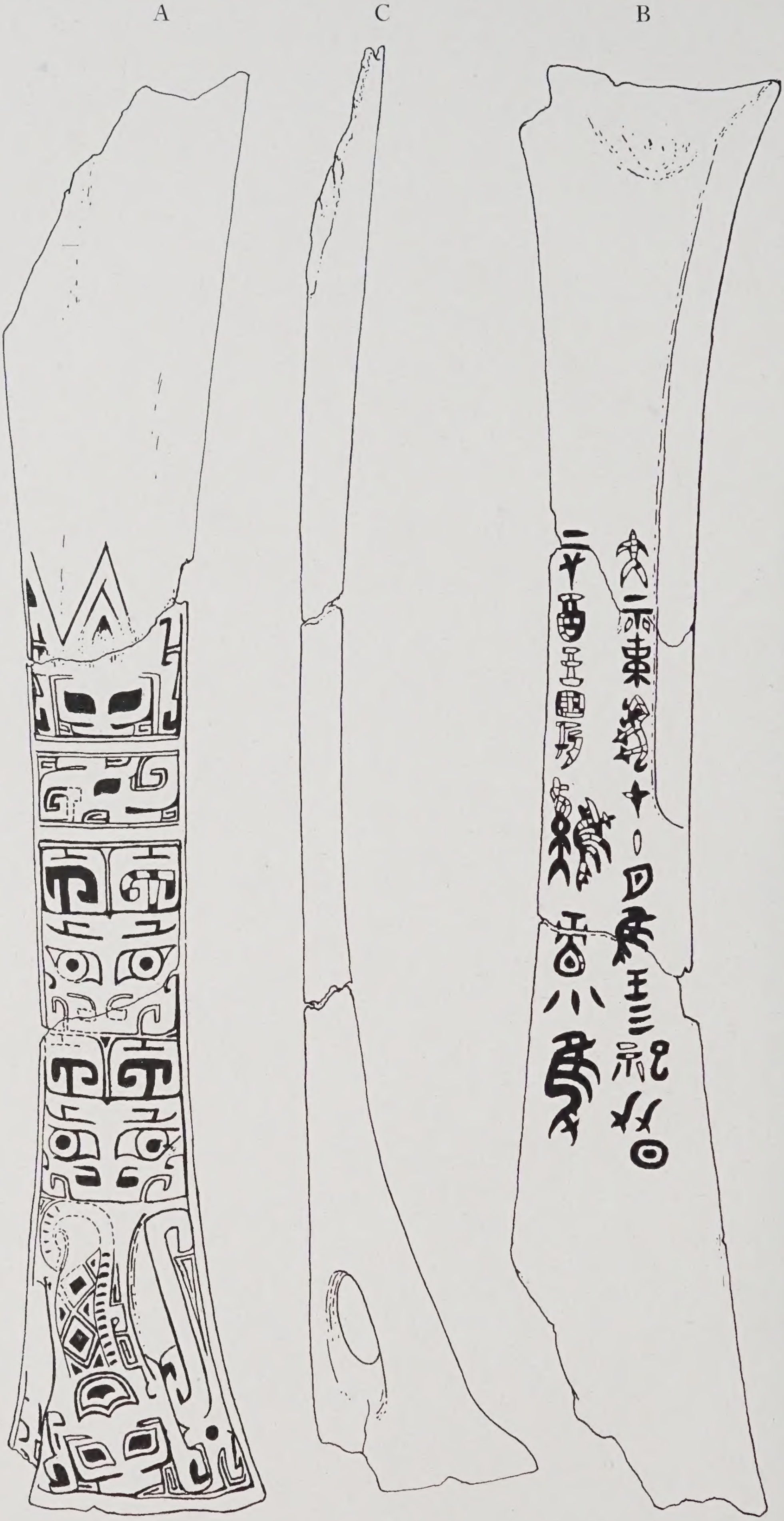
B. Reverse and convex surface. The three zones of this surface correspond in area with those of the other side, but differ in designs. The lower zone is filled with a highly stylized *k'uei*, inverted, with a complicated crest, and a very involved body formation, filled with meanders and *k'uei* symbols. The central zone is a stylized *k'uei* with central eye, and the upper zone is a variation of the cicada border.

The plain end of the rib has probably been shortened somewhat from its original full length.

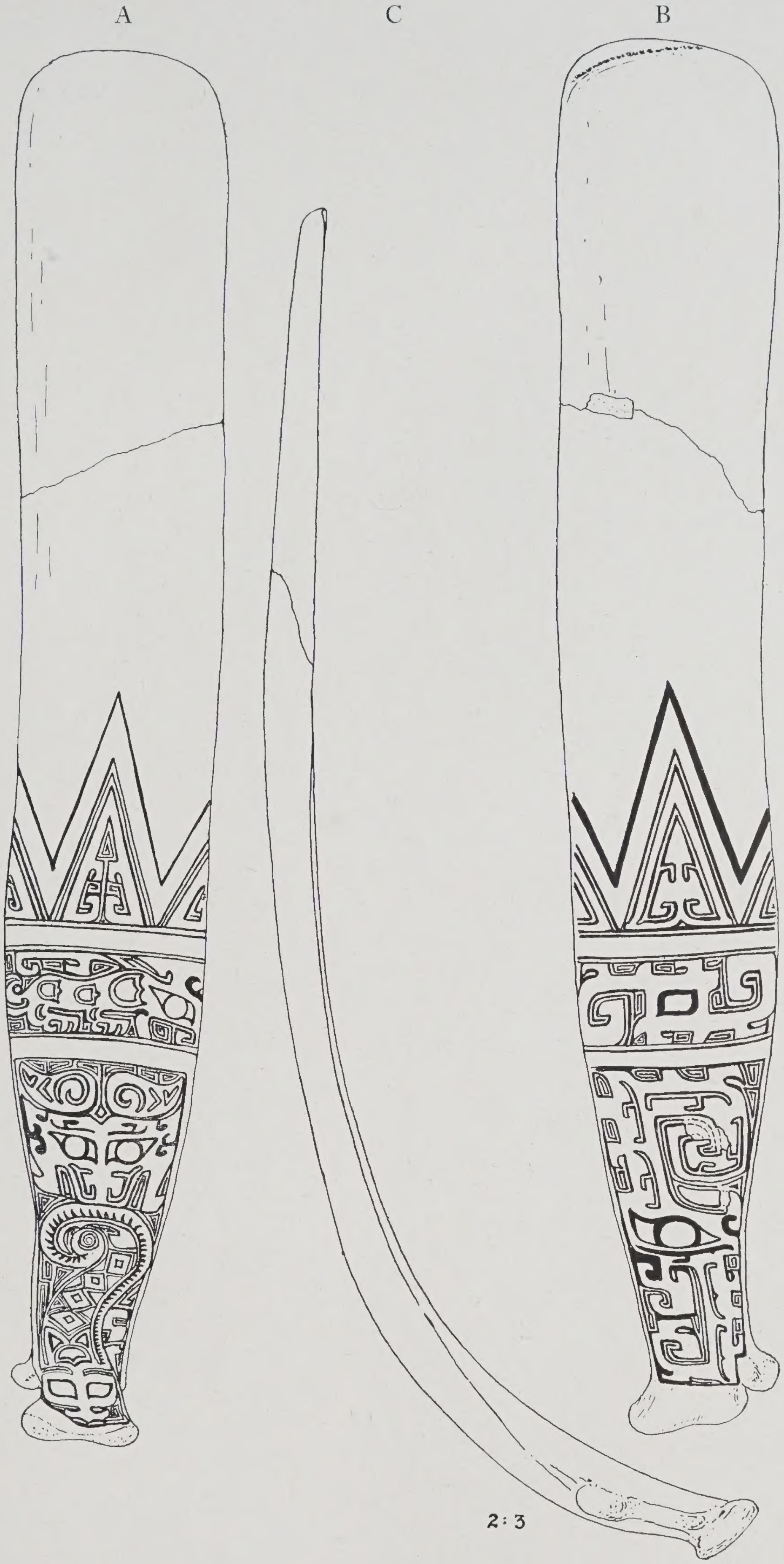
Plate XVII. Carved bone spatula. NB. 4309. Two-thirds actual size; details full size.

This bone, which is probably part of a rib of a large animal, is carved in semi-round, and the designs on both surfaces correspond. It was rapidly disintegrating until treated with vinyl-acetate solution. Restorations are shown by the dotted lines.

PLATE XV

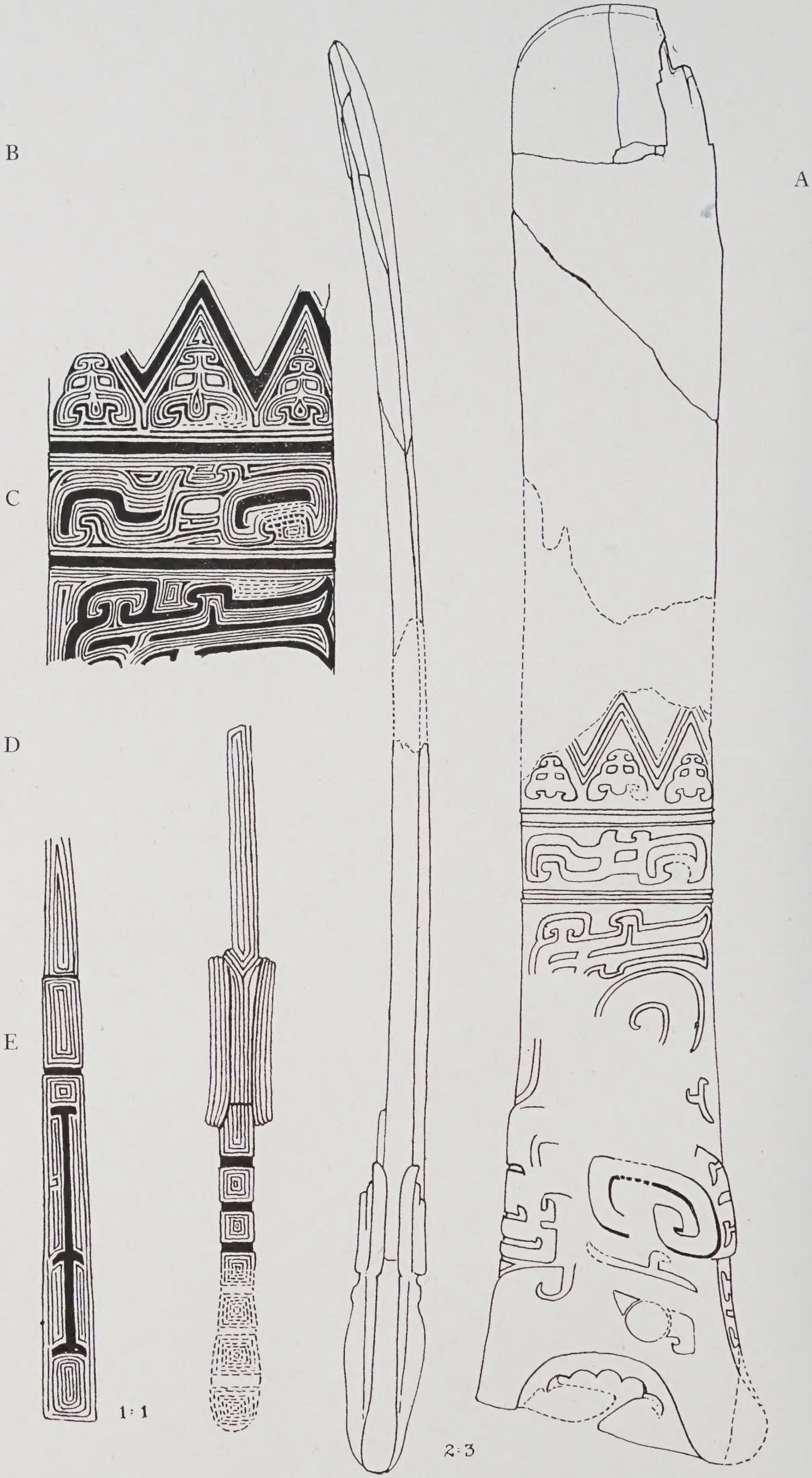


Carved Spatula. NB. 6251. Inscribed. Date 1172 B.C.
A. Obverse B. Reverse C. Section



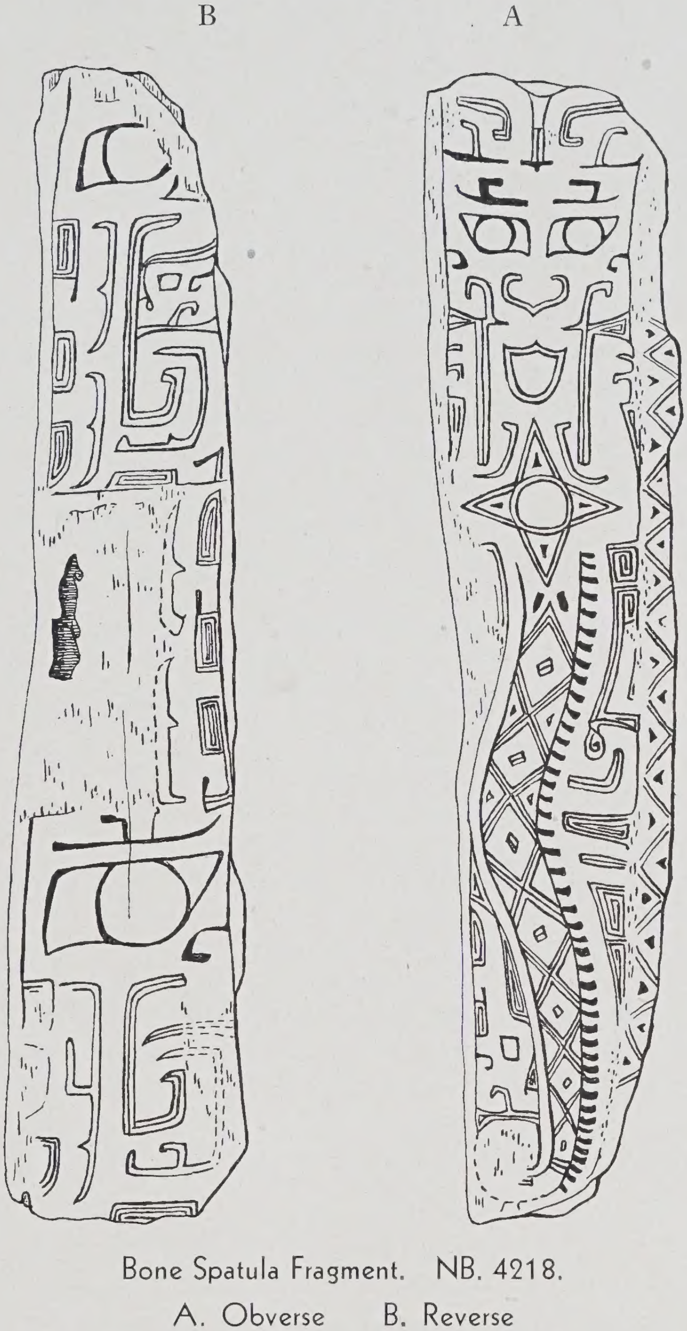
Carved Bone Spatula. NB. 3069.
A. Obverse B. Reverse C. Section

PLATE XVII



Carved Bone Spatula. NB. 4309. A. Obverse B. Section C, D, E. Details

PLATE XVIII



Bone Spatula Fragment. NB. 4218.
A. Obverse B. Reverse

The usual three-zone demarcation is followed in the composition of the designs. The lower zone is occupied by a stylized tiger, with open jaw and tusks; eye, eyebrow, and ear on each side, and strong claws below the ear. The body outline is not clear owing to the crumbling of the bone, and an object of fish-like form occupies the upper end of this zone. The central zone *B* has the usual one-eyed stylization of a *k'uei*; and the upper zone *C* has the cicada border and plain spatulate end.

Plate XVIII. Carved fragment of spatula. NB. 4218. Actual size.

This bone is similar in type to that of *Plate* XVI in that the obverse aspect is on the convex surface, and there is no thickened ridge on either surface. The rib is narrow and thick. Only zone *A* remains, and both ends of this are slightly lacking, but in general the zone is probably complete.

A. On the obverse aspect the lizard-shaped figure begins at the top with a frontal feline mask. Immediately under is a scale, below which is a four-pointed star, and on either side are the forelegs extended upwards to the lower jaw of the masks. The effect is that of a completely reverted head, attached to the shoulders of the reptile.

Below the star the sinuous body tapers off to the tail. Along the back are lozenge-shaped scales; to the right is the belly-fur fringe and in the centre, on that side, are the stylizations of leg or legs. To the right again is a serrated design filling up a depression in the bone, and on the left lower space is a small stylized *k'uei* dragon. The design of this zone is similar to that of *Plate* LIX.

Stars in Shang design are not limited to three or four points, but may be found with many points. A bronze horse jingle in the Royal Ontario Museum has on it a star design with eight points, and another bronze is known to have a six-pointed star.

B. The reverse aspect, which in this case is on the rounded or outside surface of the rib bone. The greater part of zone *A* remains, but the designs on this surface of two stylized animals in profile, are slightly incomplete, through crumbling and breaking off the ends. The head of a small *k'uei* dragon is seen filling a vacant space below, and to the right of the upper eye.

Plate XIX. Carved fragment of spatula. NB. 4219. Actual size.

This bone contains zone *B* and parts of zones *A* and *C*.

A. Obverse surface. Only the tail of the lizard animal remains, with semi-lunar scales down the body, and the serrated line of belly-fur to the left, with part of the leg formation showing. On each side in the meander background is a circular design, both of which may be accepted as animal eyes, used here for decoration purposes.

The horizontal zone *B* has the usual stylized dragon with single eye.

The cicada border only is showing on the remains of zone *C*.

B. On this reverse surface there is a dragon in profile in zone *A*, with ridge on the left-edge, the usual stylized dragon in zone *B*, and the cicada border in zone *C*. In addition there is carved in high relief at the top of zone *A* the figure of a tortoise. It appears to be imposed above the body structure of the *k'uei* dragon, and stands out in striking contrast, as may be seen in the sectional drawing.

Plate xx. Carved fragment of spatula. NB. 4217.

This fragment includes only part of zone *A*, and the bone is badly disintegrated.

A large foramen pierces the thicker end, but the other end is broken and indistinct.

A. The obverse surface is filled with a lizard form very similar to *Plate* xxi where the reptile is more clearly defined. In the lower right corner is the eye and outline of a *k'uei* dragon's head.

B. The reverse surface contains two stylized dragons in profile, with the eye of each clearly locating their heads.

Plate xxi. Carved fragment of spatula. NB. 6253. Actual size.

This bone is the thick end of a spatula, made from an animal rib, with perforation of the foramen at the larger end.

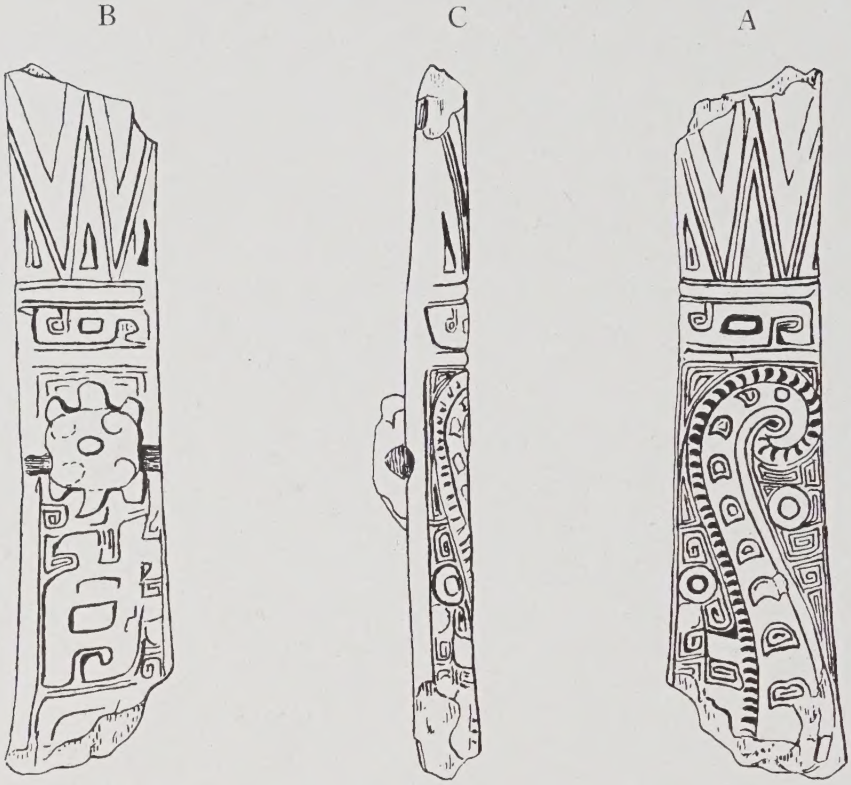
A. Obverse. The fragment only covers the complete section of the lower zone *A*. In this section is a sprawling lizard-like reptile with frontal view of head, a large scale behind it, and lozenge designs in sequence down the body to the curled tail. On each side of the shoulder are the forelegs and claws; and in the open places on each side of the head are a *k'uei* on the left (note the eye) and a *k'uei* symbol on the right. The under-belly fur is designated by the solid serrated line. In the vacant place under the curled tail is a small but complete *k'uei* dragon, in profile, and showing the eye, the crest, snout, and jaw, and the very small legs.

B. Reverse. Two stylized *k'uei*, in profile, occupy the lower zone, and may be traced from the eyes.

In the middle zone, the eye and part of the stylized *k'uei* may be seen; and only a corner of the cicada triangle of the upper zone is evident. No part of the plain spatulate end remains, and the thick ridge on the edge has also broken away.

Plate xxii. Carved fragment of spatula. NB. 6252. Lower corner and plain spatulate end missing.

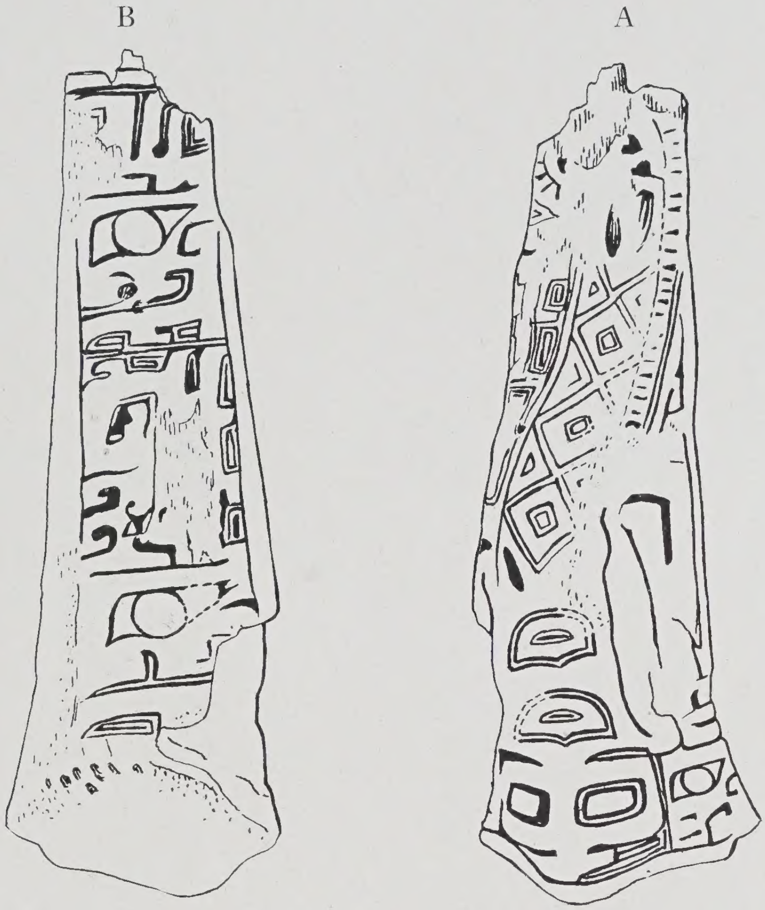
A. Obverse. The lower zone *A* is filled by a tenuous *k'uei* reptile in profile. Only one scale is shown behind the eye. Under the scale is a foreleg, of which the front claws are missing. A small baby *k'uei* fills the space to the left of the section, under the body of the larger reptile.



Bone Spatula Fragment. NB. 4219.

A. Obverse B. Reverse C. Side view

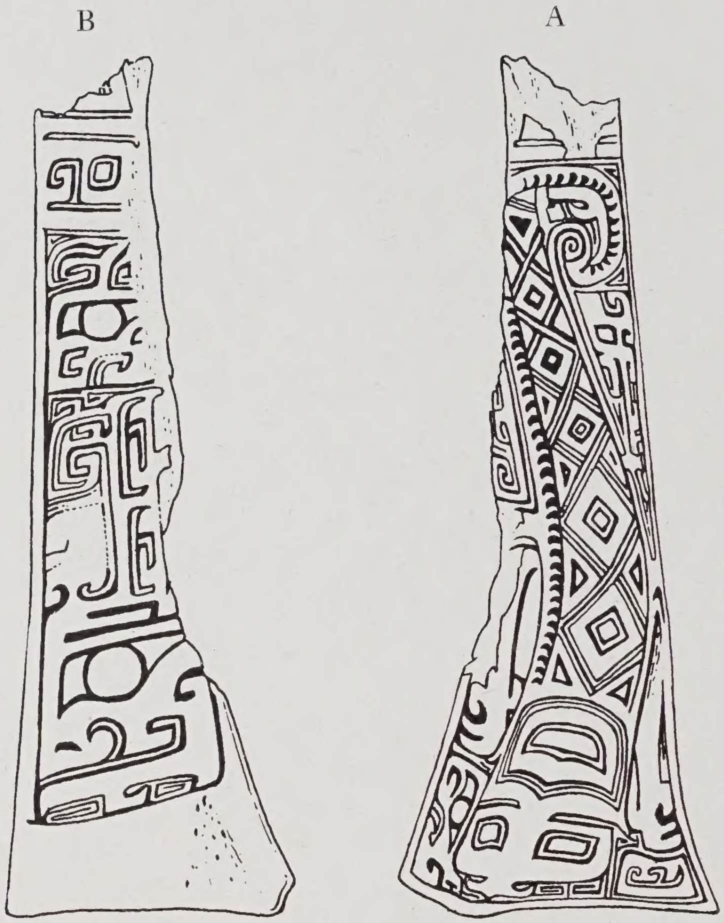
PLATE XX



Bone Spatula Fragment. NB. 4217.

A. Obverse B. Reverse

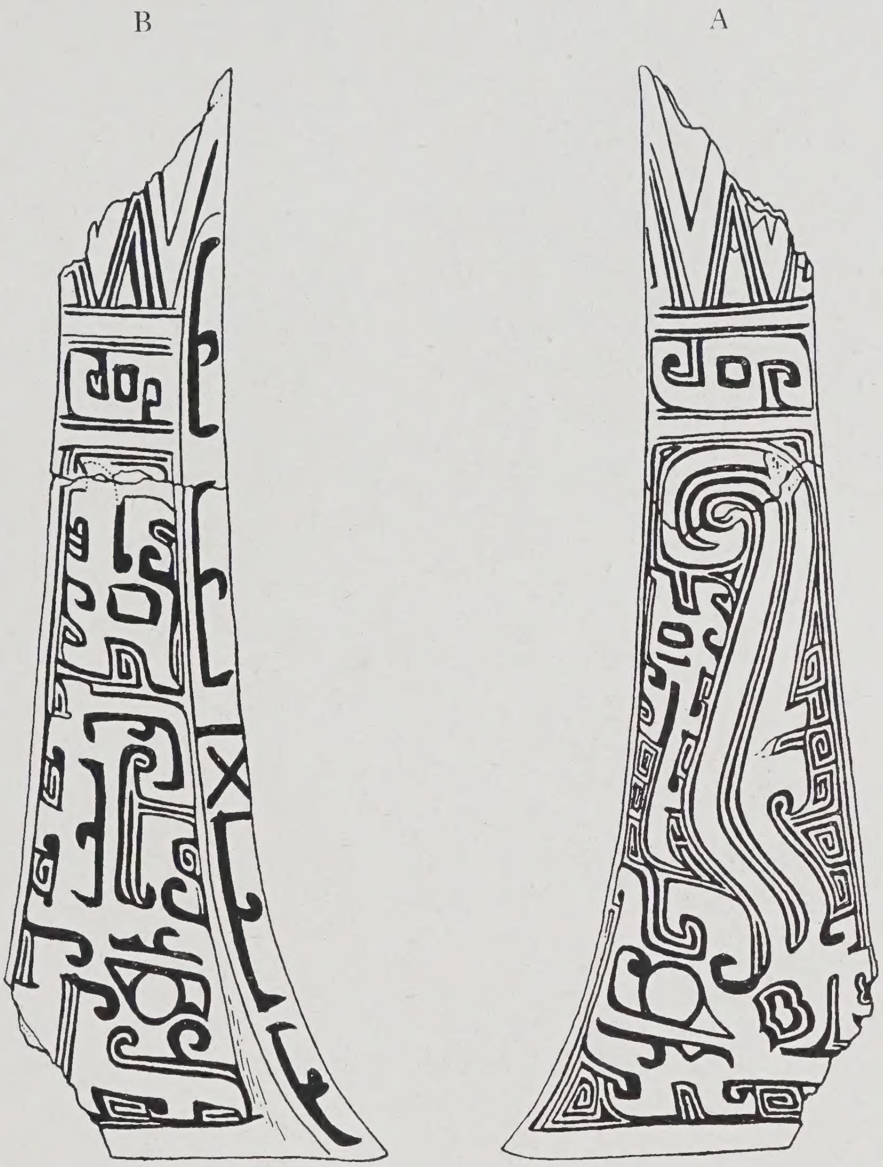
PLATE XXI



Bone Spatula Fragment. NB. 6253.

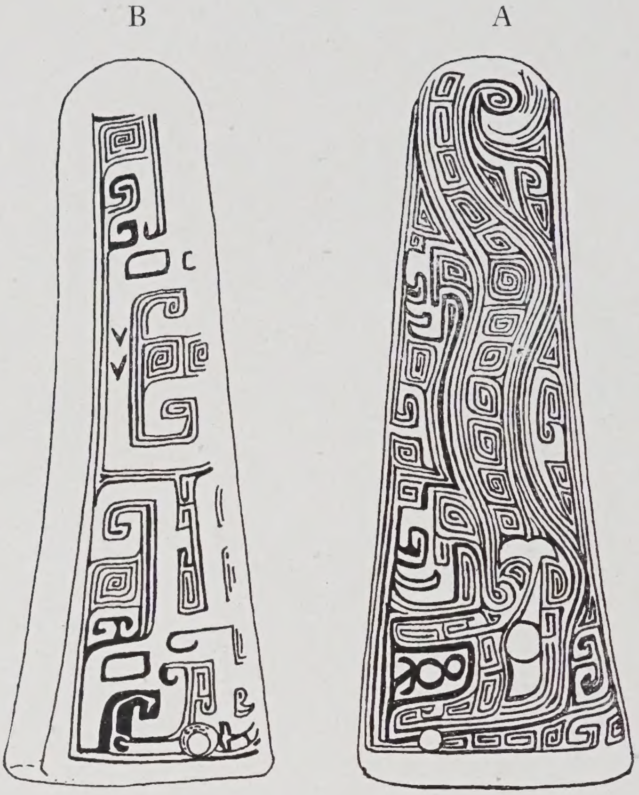
A. Obverse B. Reverse

PLATE XXII



Bone Spatula Fragment. NB. 6252.

A. Obverse B. Reverse



Bone Spatula Fragment. NB. 6254.
A. Obverse B. Reverse

In the central zone is a highly stylized *k'uei*; and in the upper zone the lower part of the cicada border still remains, but the plain spatulate end is missing.

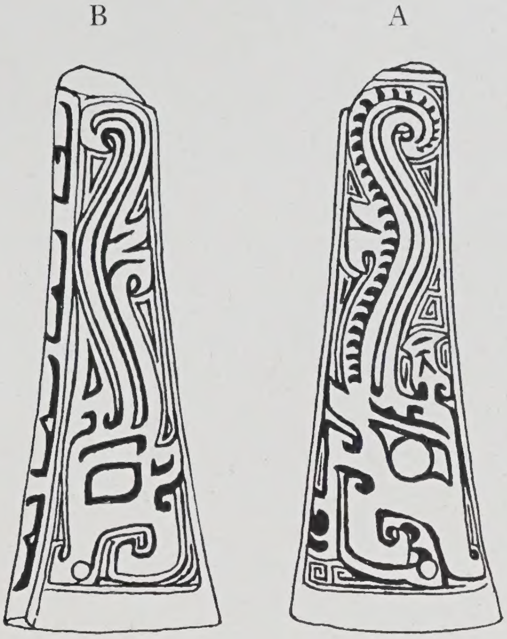
B. Reverse. In zone *A* are two *k'uei* dragons, in profile, with combination horns or crests. In zone *B* is the stylized *k'uei*; and in zone *C* a part of the cicada zone. The thickened ridge to the right has four *k'uei* symbols, in the centre of which is the symbol X which is Shang script for 5, so that this spatulate was "number five."

Plate XXIII. Carved fragment of spatula. NB. 6254.

This fragment includes only zone *A* of the original complete bone. This bone is hard and very light in colour having the appearance of ivory.

A. Obverse. Slender animal, in profile, with powerful jaws, a feline ear, and two legs with strong sharp claws. The body is covered with meander designs, as are also the backgrounds.

B. Reverse. Two stylized animals in profile. The lower one with a feline ear, and a foreleg with claws. The upper one with a compound crest,



Bone Spatula Fragment. NB. 6255.
A. Obverse B. Reverse

and a long extended snout suggestive of an elephant's trunk. The two V-shaped marks are a conventionalization to suggest the round. The thick ridge is plain, and is along the left side.

This bone has been used as an implement of some kind, for there is no fresh break to show where the missing parts had been, and all the edges have been worn and polished very smooth.

Plate XXIV. Carved fragment of spatula. NB. 6255.

This bone is similar to the latter in its ivory-like character. Only zone *A* remains of this spatula.

A. Obverse. A sinuous *k'uei* dragon in profile occupies the whole section. It has a turned up snout and curled tail, its horn is bottle-shaped, its foreleg has sharp claws, and the under-belly fur is designated by the heavy serrated border. A small hole has been bared just below the snout, probably for a thong by which this object could be carried as a pendant.

B. Reverse. A reptile similar to the above, but without the body fur, and with a pointed horn or crest.

The thickened ridge on the left is filled with four *k'uei* symbols.

This dragon is considered in Chinese folklore to be the male of the species; that on the obverse with bottle-shaped horn being the female (*W. C. White: Tomb Tile Pictures of Ancient China, p. 44; Toronto, 1939*).

II. SHORT, WIDE SPATULAS

Plates XXV–XLI

These spatulas are known to Chinese archaeologists as *shih*: a Chinese character composed of the Radical for "wood" *mu*, and "four" *ssu*.

The plain uncarved ones are quite common, but plain and carved all have the butt end, that is zone *A*, thickened on one lateral margin, which may be either the left or right edge. It has been suggested that this ridge was for the purpose of strengthening the butt part of the object, and probably it was so originally; but the very slight thickening in many of the spatulas points to a conventional use, which probably derives from the scapula of oracle divination.

The carved spatulas of this group have the usual decorative three-zone demarcations, but there are no frontal animal masks, and all the animals are highly stylized and only given in profile.

Plate XXV. Plain bone spatula. Actual size. NB. 4222.

A and B. Obverse and reverse surfaces. The thickened ridge is to be seen on the left margin of B.

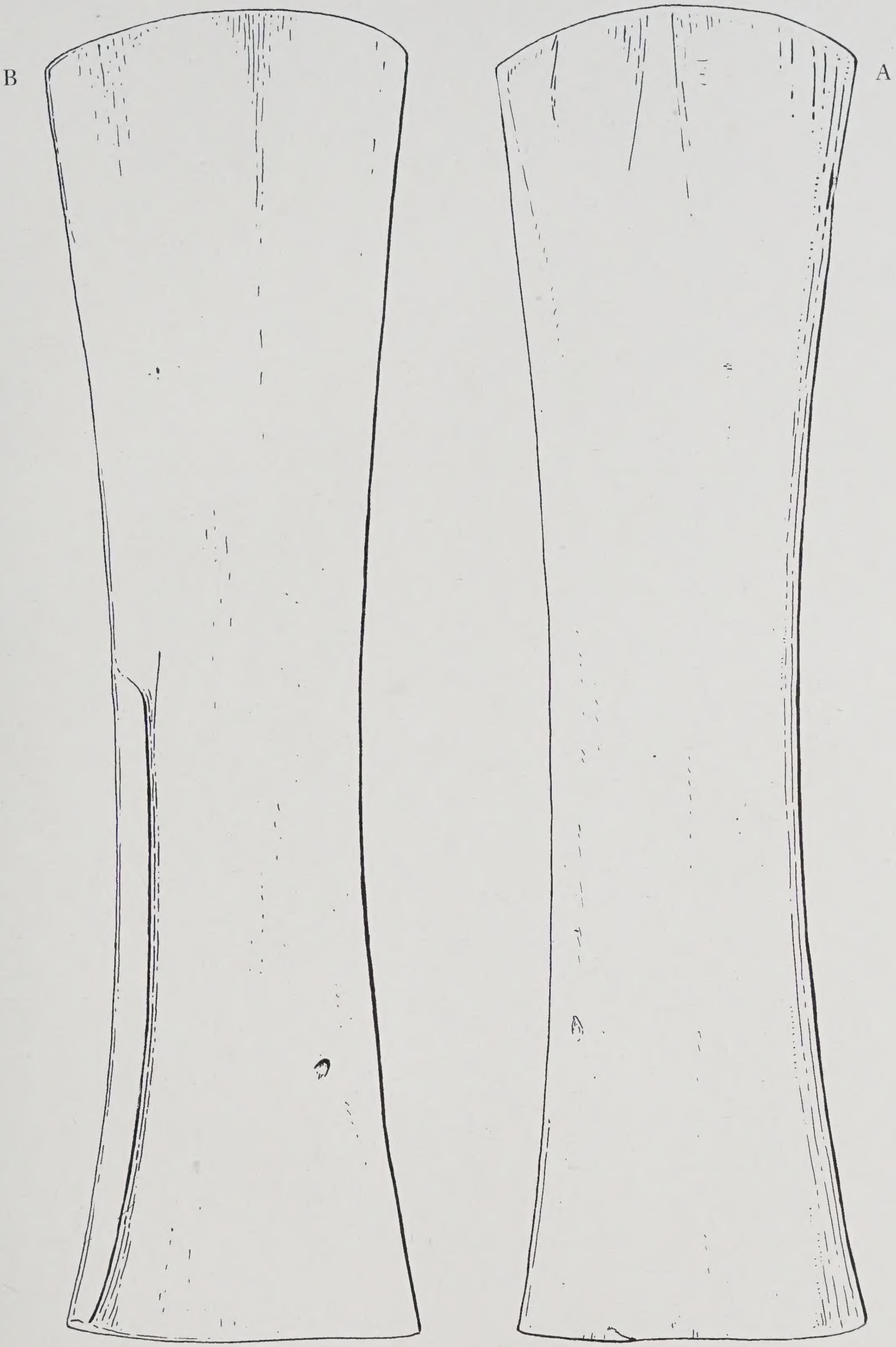
Plate XXVI. Carved bone spatula fragment. NB. 6256.

A and B. Obverse and reverse. Each surface contains a stylized dragon or animal in profile in zone *A*, and each has a horn or crest of the compound type.

In zone *B* there is the usual stylized *k'uei* dragon with centre eye, and in zone *C* are remains of the cicada border. Both surfaces have background designs of meanders and the linear *k'uei* symbols (*Illus. 4: D*).

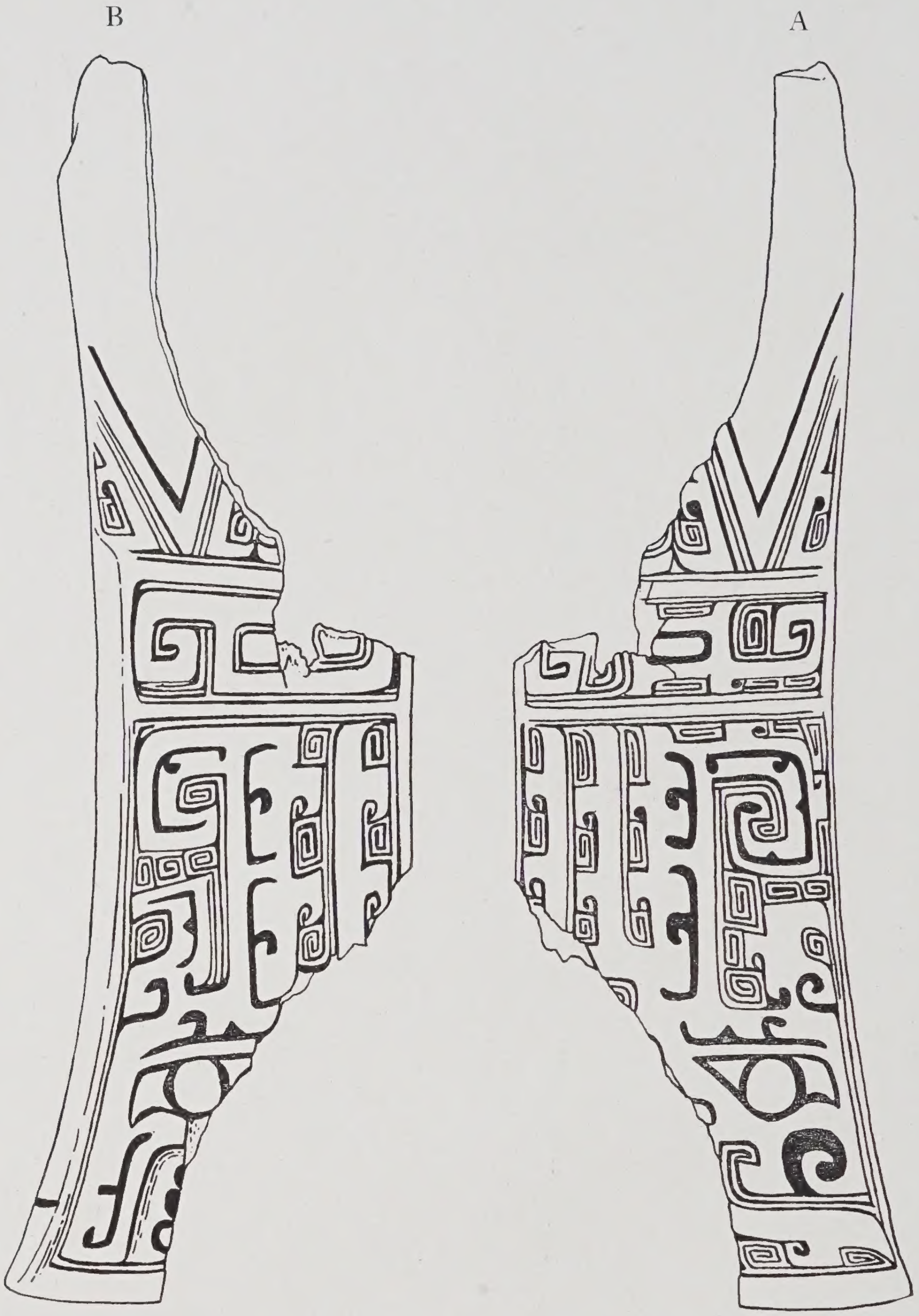
The ridge on the left of B has an incised mark designating it as "one."

PLATE XXV

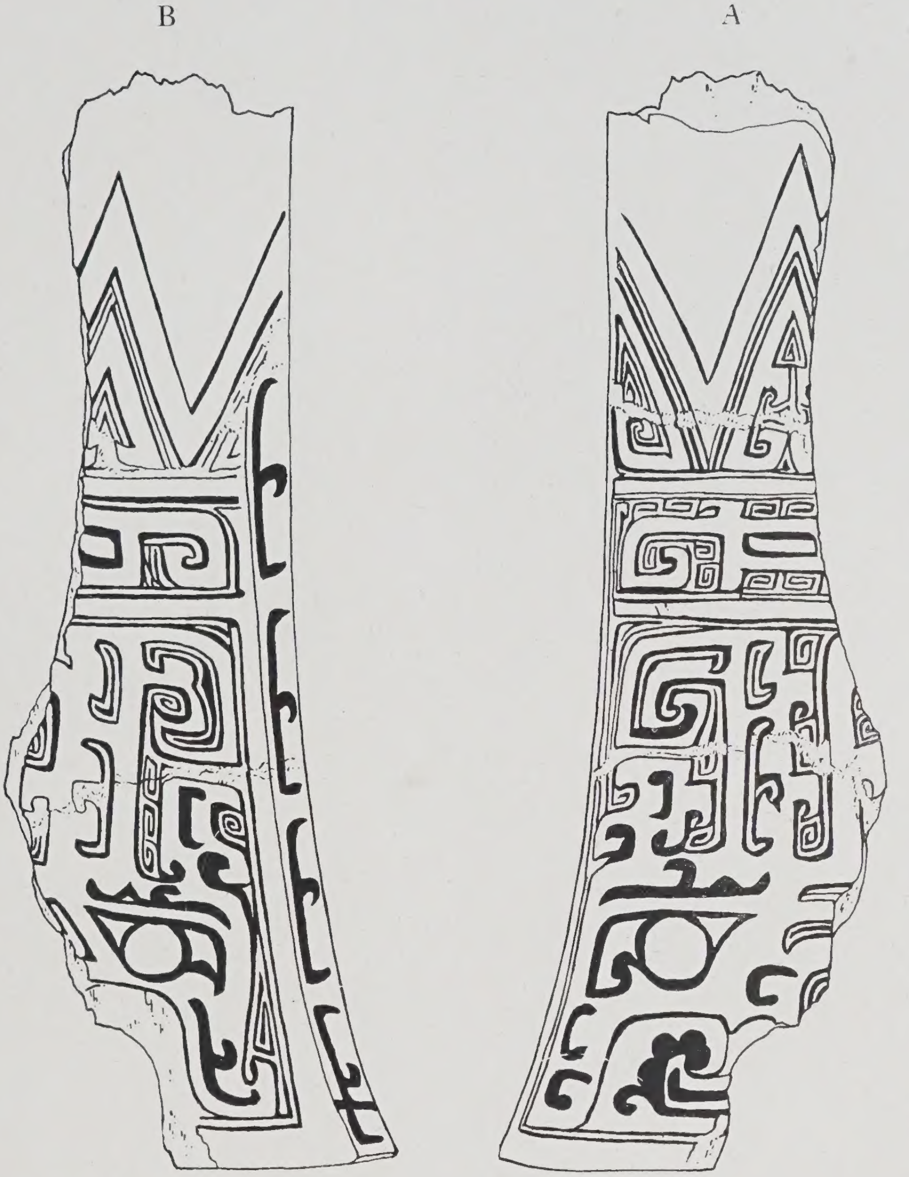


Plain Bone Spatula. NB. 4222.
A. Obverse B. Reverse

PLATE XXVI



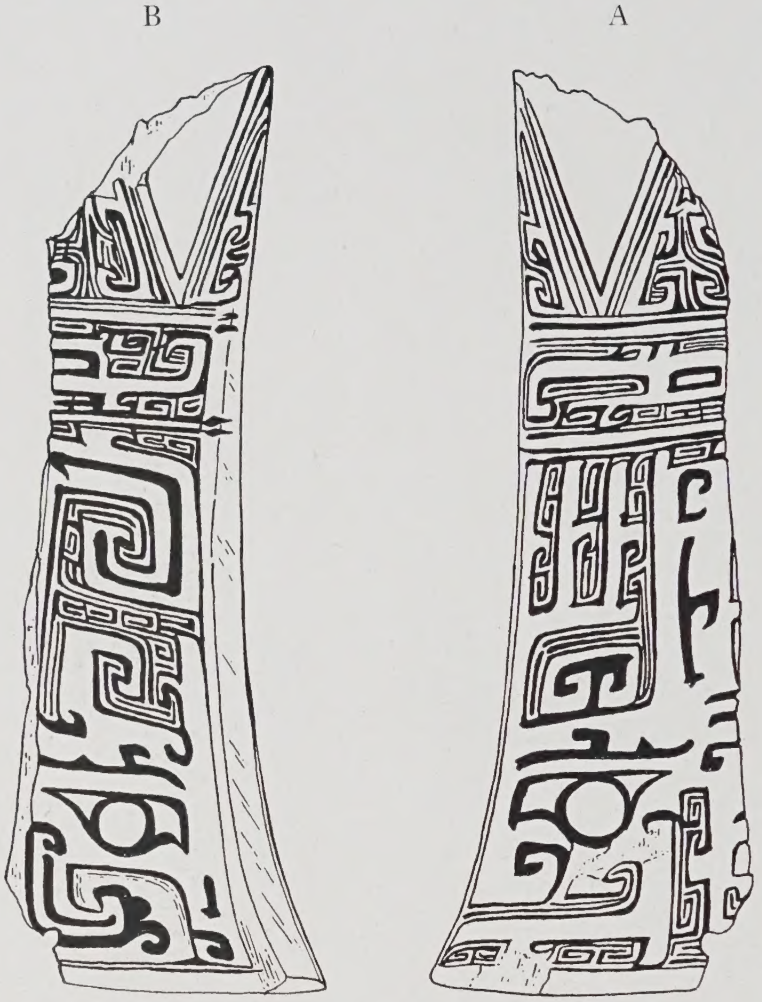
Bone Spatula Fragment. NB. 6256.
A. Obverse B. Reverse



Bone Spatula Fragment. NB. 6257.
A. Obverse B. Reverse

Plate XXVII. Bone spatula fragment. NB. 6257.

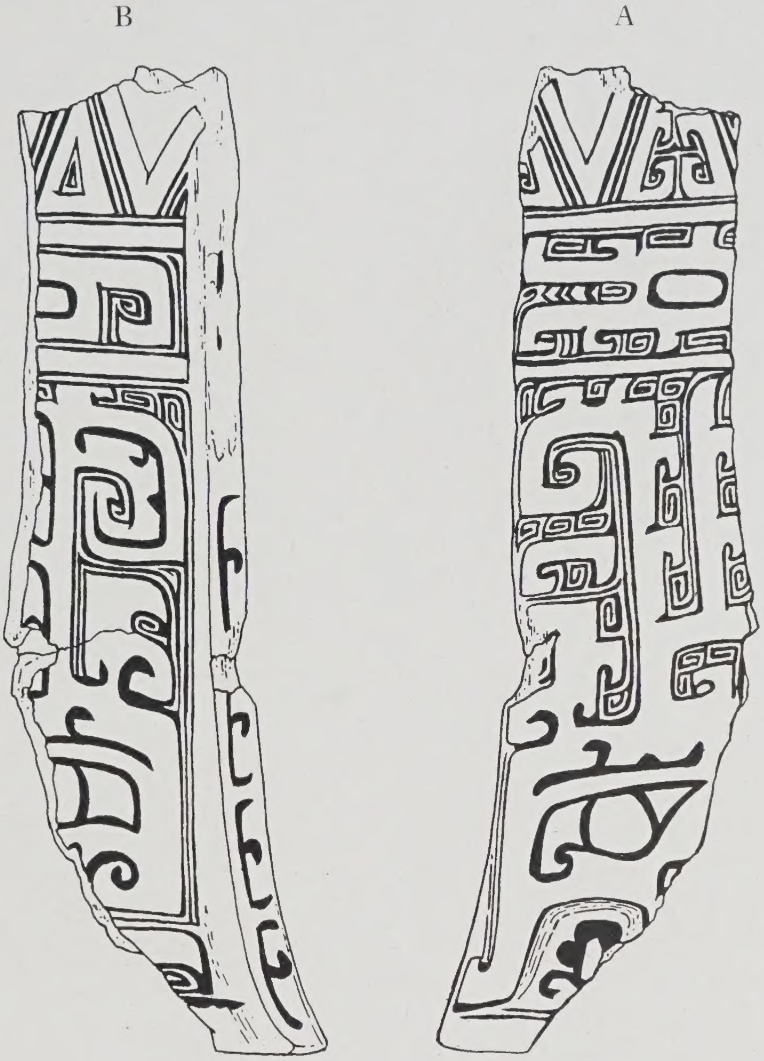
A and B. Obverse and reverse. The description of the previous fragment applies to this object, with the following differences. The stylization of mouth and teeth is very pronounced in A; and in B the thickened ridge is on the right margin, and has five *k'uei* symbols engraved on it, with the figure "one" cutting across the lower symbol.



Bone Spatula Fragment. NB. 6258.
A. Obverse B. Reverse

Plate xxviii. Bone spatula fragment. NB. 6258.

A and B. Obverse and reverse. The thickened ridge of B is on the right margin and shows marks of having been finished by filing. The crest over the eye of the animal in A is of the feline T-shaped type; the crest over the eye of the animal in B is a simple form of the compound type. Otherwise it follows in general the design of the fragment in *Plate* xxvi.

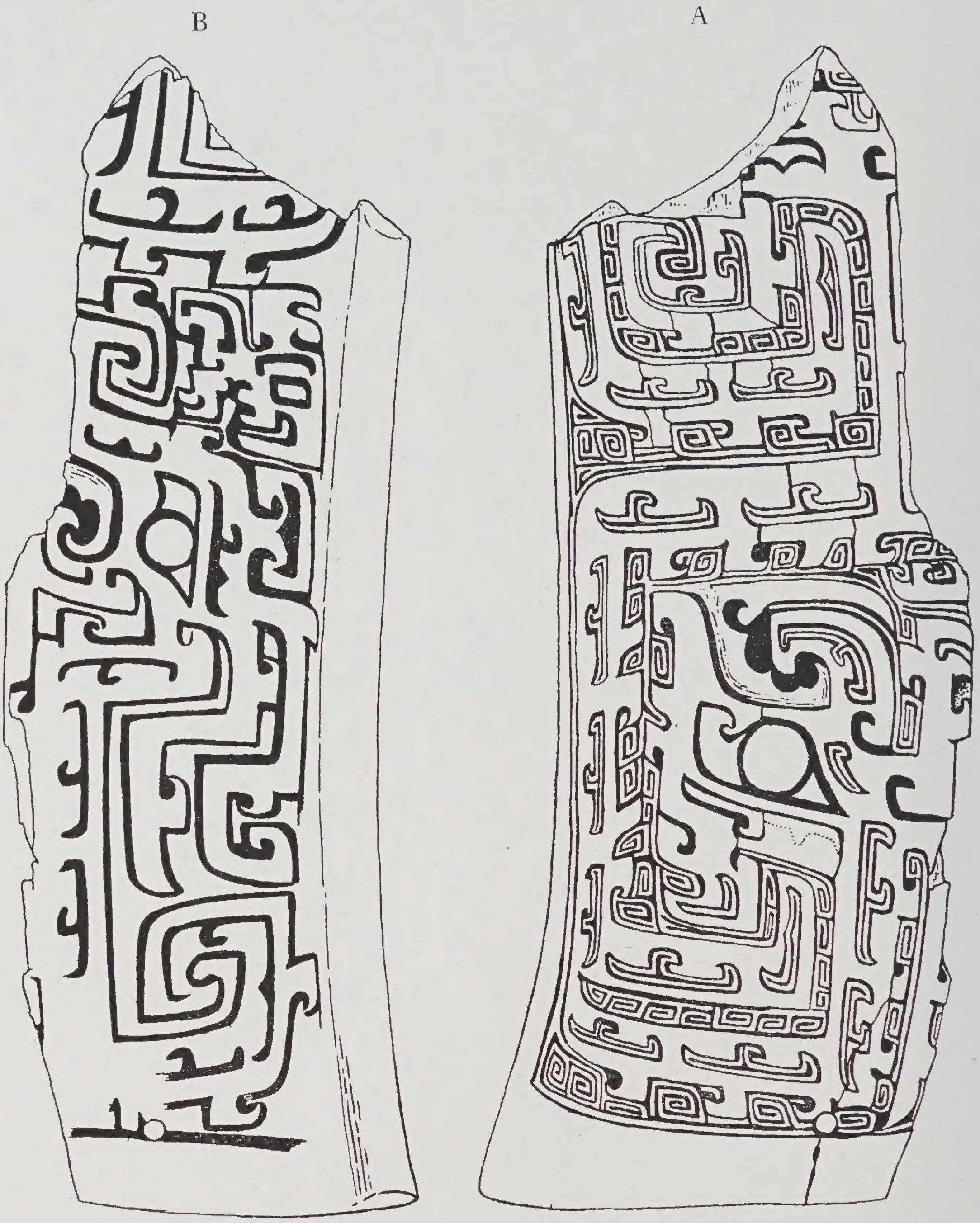


Bone Spatula Fragment. NB. 6259.
A. Obverse B. Reverse

Plate XXIX. Bone spatula fragment. NB. 6259.

A and B. Obverse and reverse. This fragment follows the description of that of *Plate* XXVII.

PLATE XXX



Bone Spatula Fragment. NB. 6260.
A. Obverse B. Reverse

Plate xxx. Bone spatula fragment. NB. 6260.

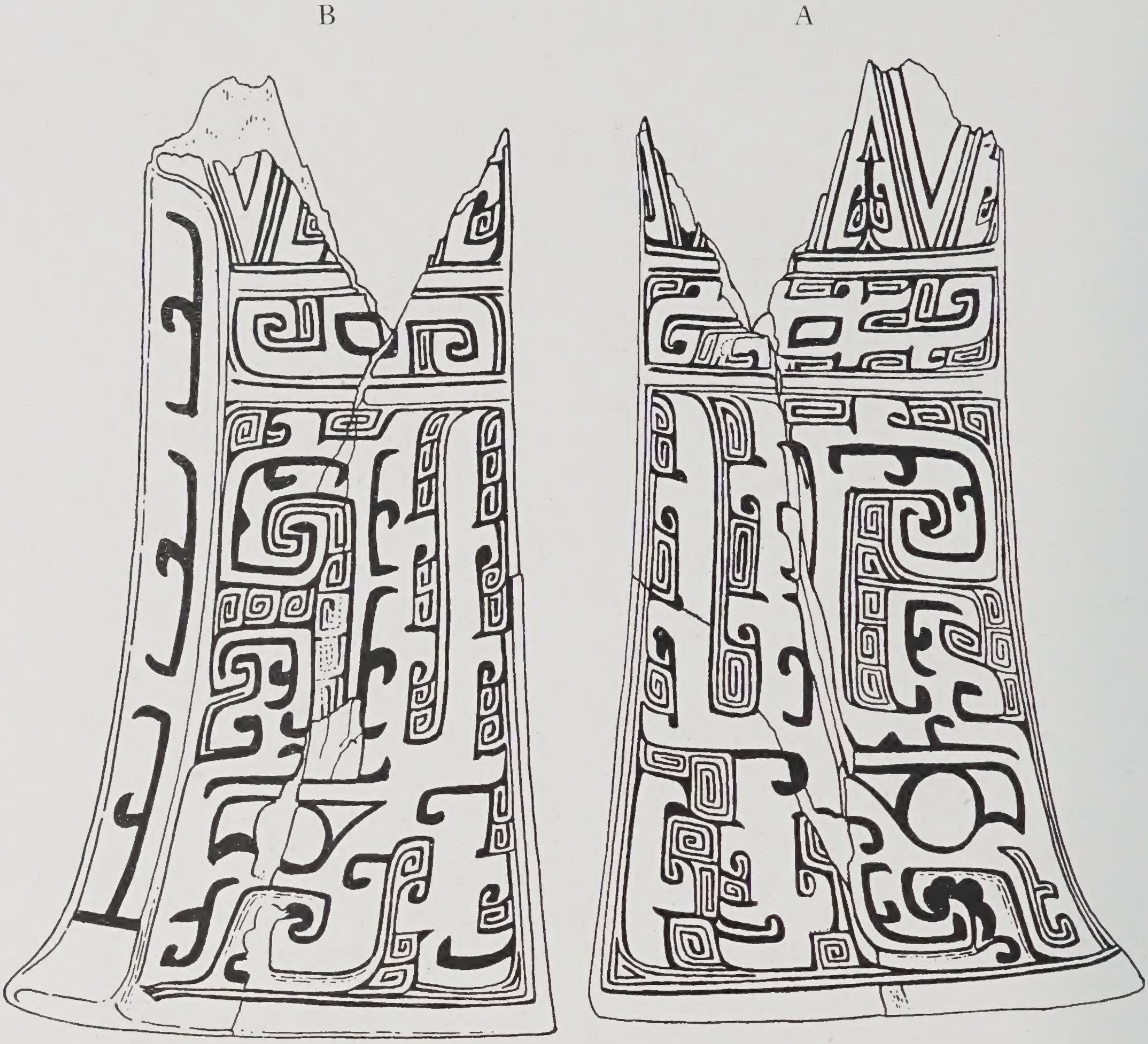
This spatula when complete must have been unusually large. In the drawing the obverse surface appears to be wider than the reverse, which is due to the fact that the obverse is convex, while the reverse is concave. There is a perforation at the bottom or butt end, possibly for attachment of a thong for a suspending loop, a tassel, or a bell.

The fragment does not show the full area of zone *A*, and there is no suggestion of either of the zones *B* and *C* which are completely missing.

A. Obverse surface. This illustration should be inverted in order to observe clearly the almost complete stylized animal in profile. It has a compound crest, eyebrow, eye, turned-up snout, and stylized teeth in open jaws, while beneath the latter are strong well-formed fore-arm and claws. Above this is the rear half of a similar animal, whose head must have faced in the same direction as the first one, as is suggested by the shield-like scale design, which invariably follows from the back of the animal's head (*cp. Plates* xv, xx, and xxxv). The background meanders and *k'uei* symbols are incised in double lines, in contrast with those of the reverse surface which are in single lines.

B. Reverse surface. A heavy-lined animal with feline crest occupies the greater part of this area, but at the upper end are parts of another animal difficult to decipher as so little of it remains. In between these is squeezed a complete smaller animal with head looking to the right in profile. It has a simple type of eye and eyebrow, over which is a compound crest, and under which are shortened leg and claws. The downward angular turn of its snout suggests the beak of falcon or eagle, while its tail also is bird-form.

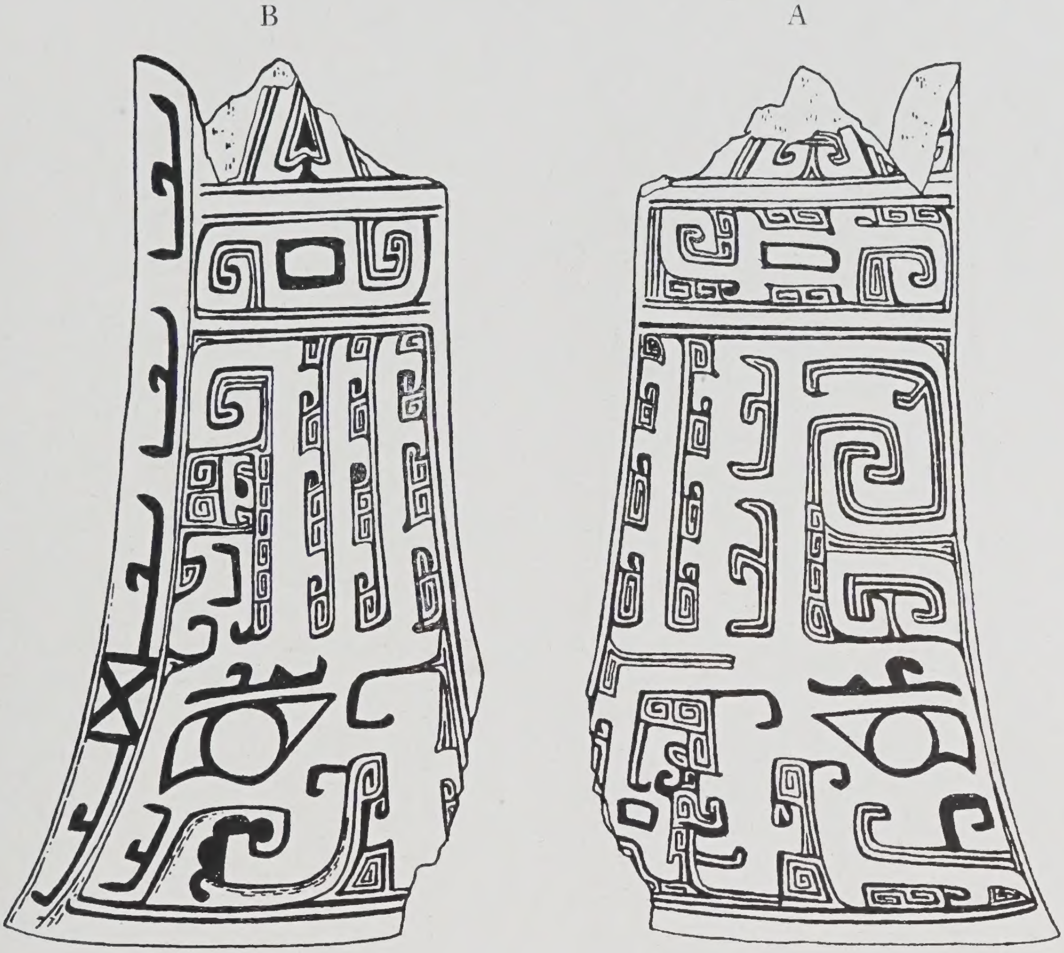
The thickened ridge of B, which is at the right margin, is rounded instead of flat, and has no design or incisions.



Bone Spatula Fragment. NB. 6261.
A. Obverse B. Reverse

Plate XXXI. Bone spatula fragment. NB. 6261.

A and B. Obverse and reverse. Although the bone is badly cracked and broken, both surfaces show the complete designs of zones *A*, practically all of zones *B*, and much of the cicada-border of zones *C*. The thickened ridge of the reverse is on the left margin, with three *k'uei* symbols and the number "one" incised on it. On both surfaces there is but one animal in zone *A*, each having a compound crest.

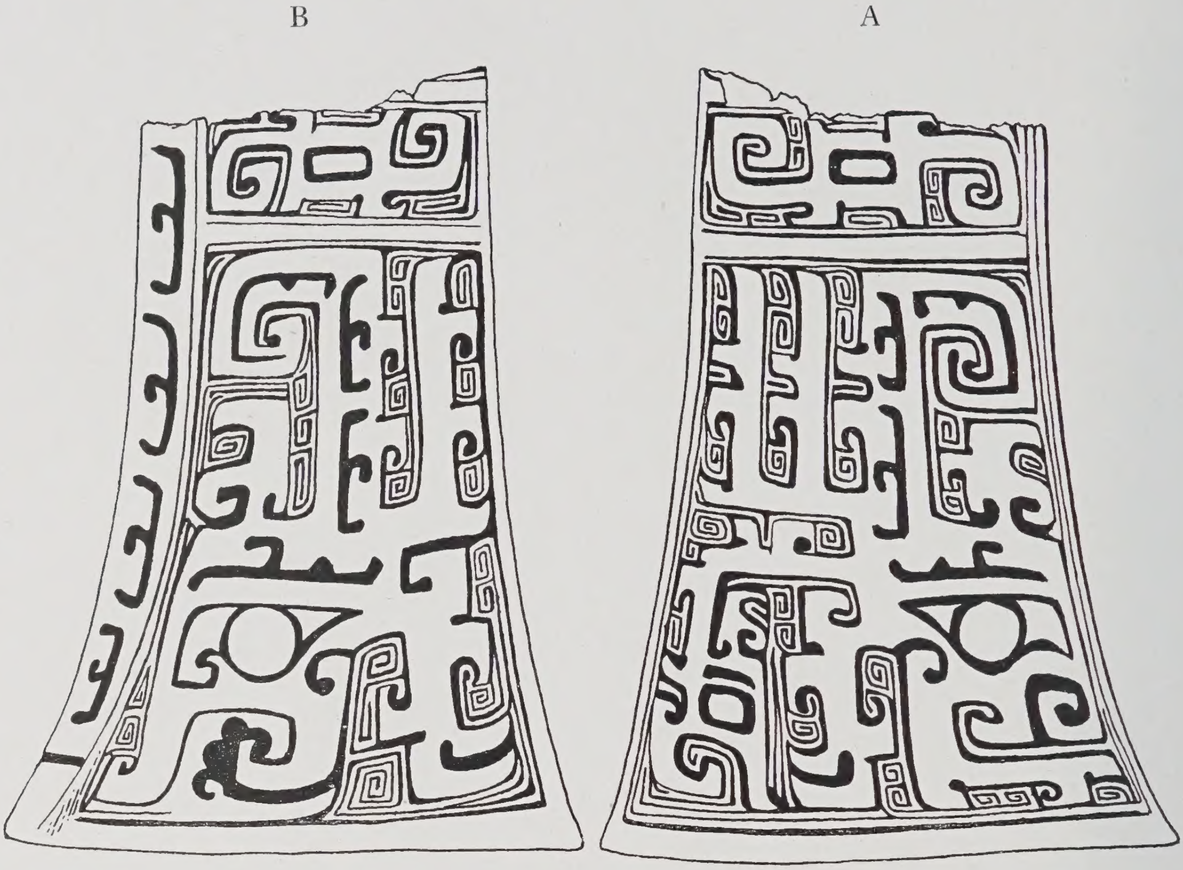


Bone Spatula Fragment. NB. 6262.
A. Obverse B. Reverse

Plate XXXII. Bone spatula fragment. NB. 6262.

A and B. Obverse and reverse. In general this fragment is similar to the previous one, but the ridge at the left margin of B has the number "five." The crest above the eye of the animal on A is feline; and in the lower left-hand corner is a small *k'uei* dragon with compound crest.

PLATE XXXIII

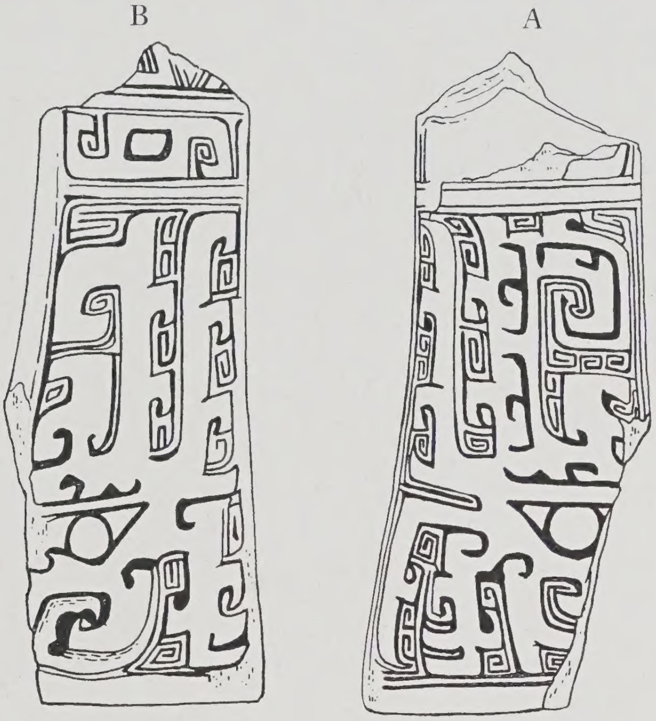


Bone Spatula Fragment. NB. 6263.
A. Obverse B. Reverse

Plate XXXIII. Bone spatula fragment. NB. 6263.

A and B. Obverse and reverse. This fragment contains the complete areas of zones *A* and *B* on both surfaces, but zone *C* is entirely lacking. It is similar in composition to the previous fragment, but is numbered "one" on the thickened ridge of B. Both of the main animals, as well as the small dragon in the lower left corner of A, have compound crests.

PLATE XXXIV



Bone Spatula Fragment. NB. 6264.
A. Obverse B. Reverse

Plate XXXIV. Bone spatula fragment. NB. 6264.

A and B. Obverse and reverse. This fragment is smaller than usual, and the stylizations are less involved, otherwise it is similar to previous specimens. In A the zones *B* and *C*, and in B the zone *C*, are entirely lacking. The lower right corner of A and the lower left corner of B are also missing.

Plate xxxv. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6265. This fragment is particularly interesting from the fact that it has three perforations at the lower or butt end, and also an inscription of two characters incised on the thickened ridge of surface B. It is unlikely that three perforations would be required for loops by which the object could be suspended. Tassels may have been attached to the perforations; or even small bells, since bells were used on sacrificial knives and ceremonial vessels.

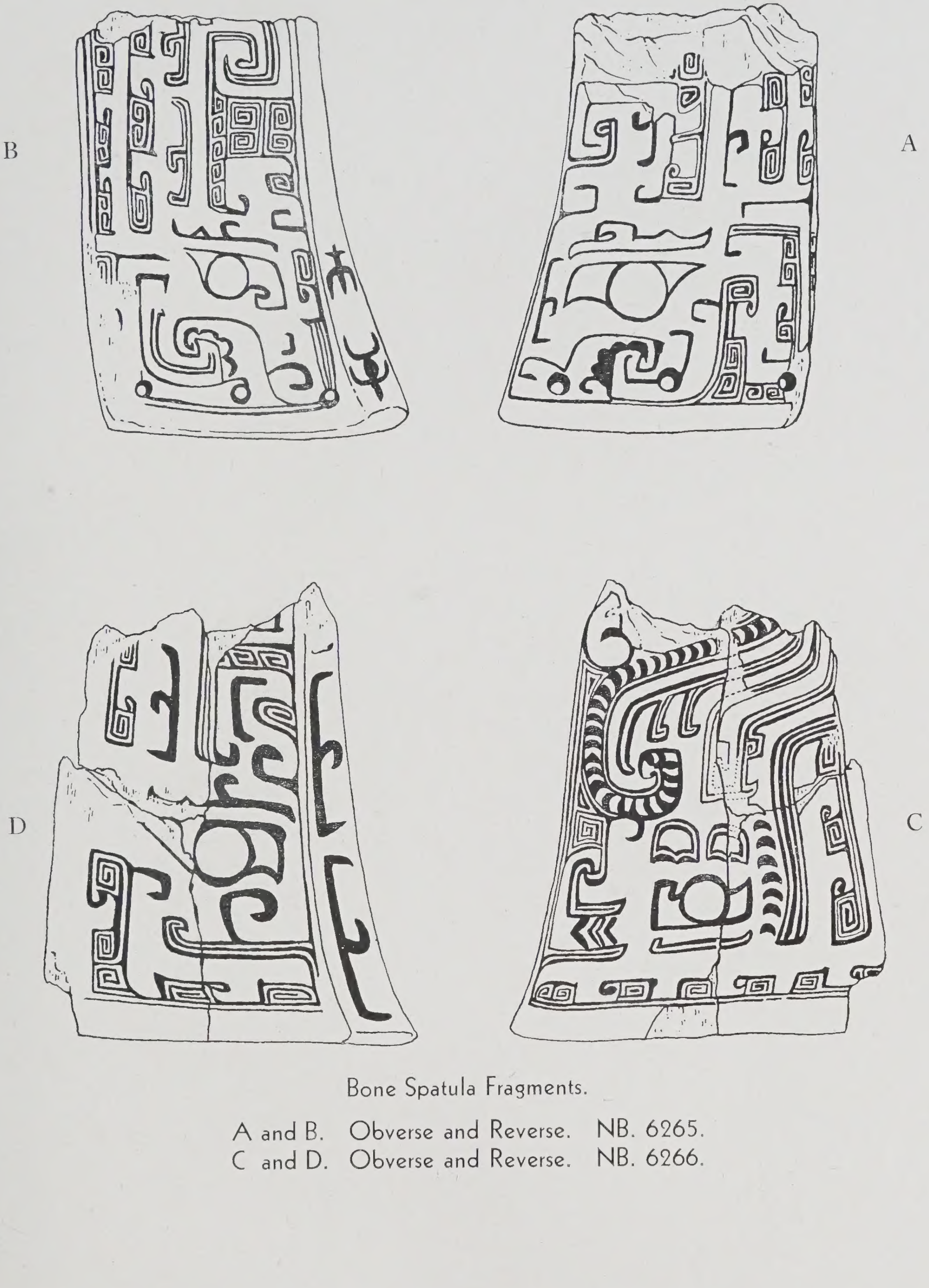
The inscription, when inverted, reads *Ta-niu*, that is Great Ox.

In the oracle bone inscriptions reference is made to Great Ox and Small Ox sacrifices, and it is reasonable to assume that this spatula must have had some association with a buffalo or ox sacrifice. The design is that of a single animal on each surface, which probably filled zones *A*. Zones *B* and *C* are entirely missing.

C and D. Obverse and reverse. NB. 6266. This fragment also takes in the greater part of zone *A*, with an animal on each surface, both of which are lacking in parts.

The design on C is unusual, and the illustration should be inverted in order more readily to decipher it. The usual crest above the simple eyebrow is missing, but there is an extension behind the eye which has the appearance of a plumed crest of a bird, while the row of dots would suggest feather or fur on the back of the bird's head. To the right of the eye, the rounded beak, suggested by the pointed arrow marks, turns downward like that of an eagle. Below the eye are two shield-like scales. The heavily dotted and curved band suggests the line of breast feathers; while the wing and tail-feathers flow in drooping lines downward to the left. Naturalistic forms of this bird type are fairly common in miniature Shang jades.

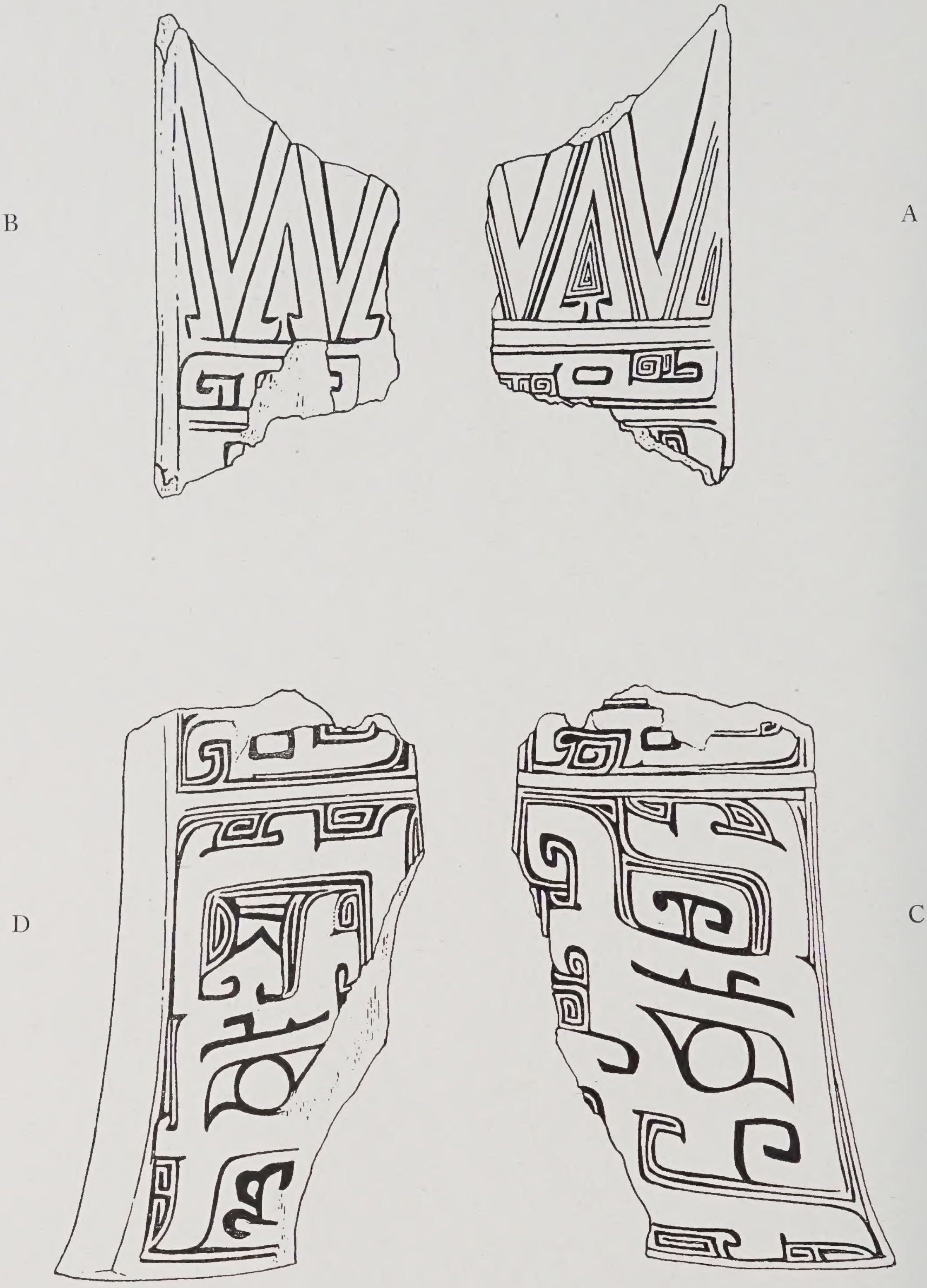
PLATE XXXV



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6265.
C and D. Obverse and Reverse. NB. 6266.

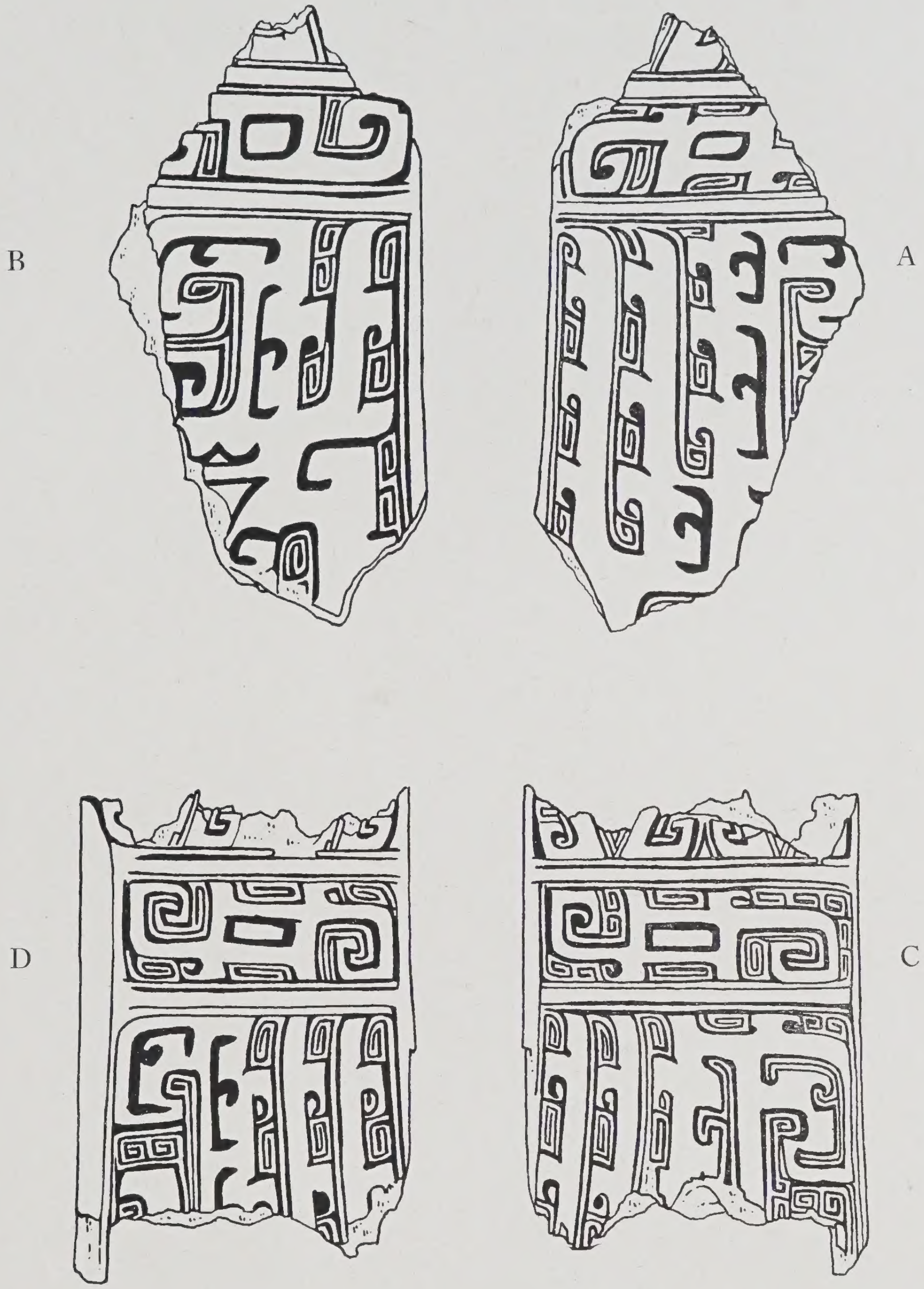
PLATE XXXVI



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6267.
C and D. Obverse and Reverse. NB. 6268.

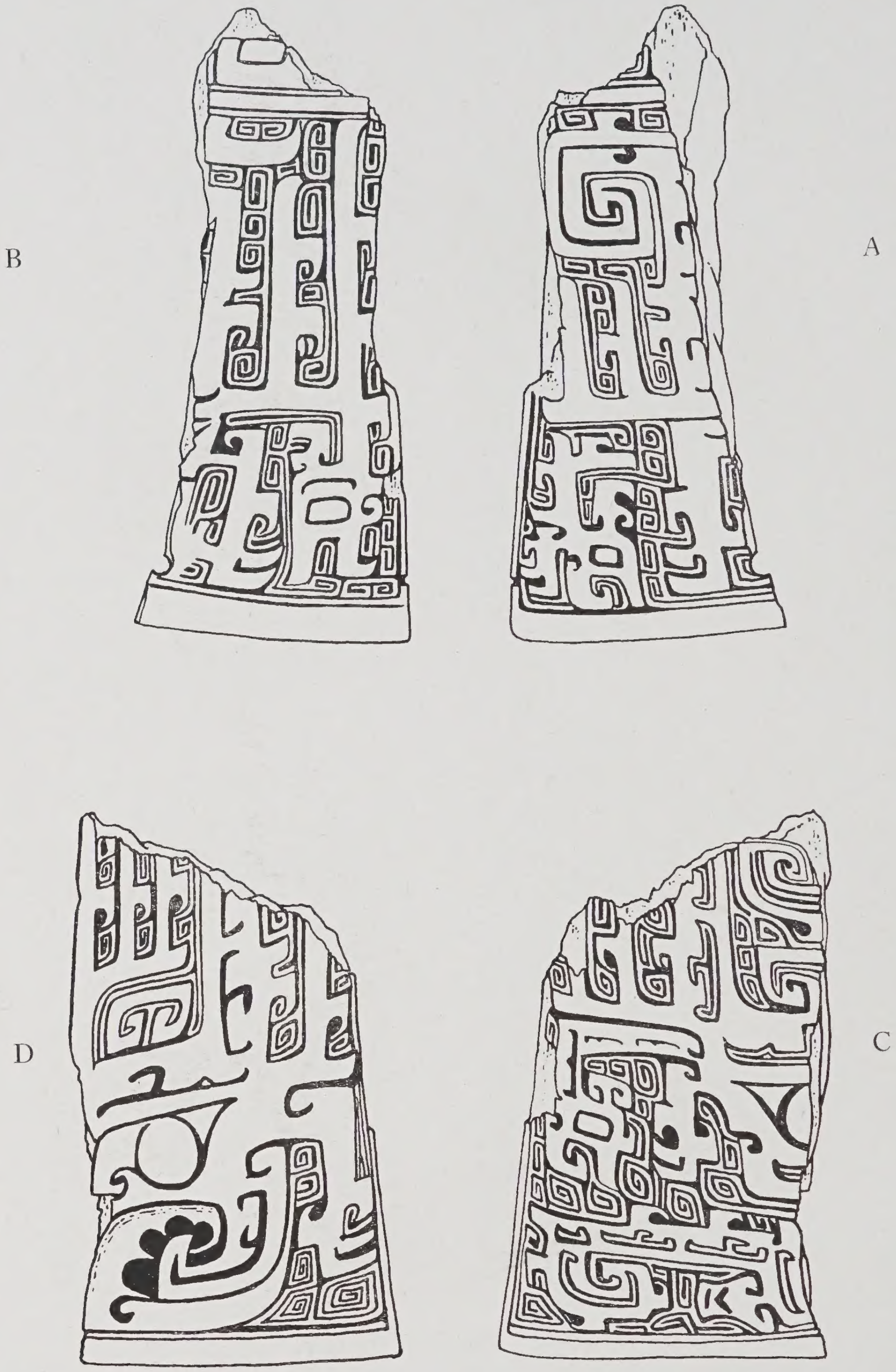
PLATE XXXVII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6269.
C and D. Obverse and Reverse. NB. 6270.

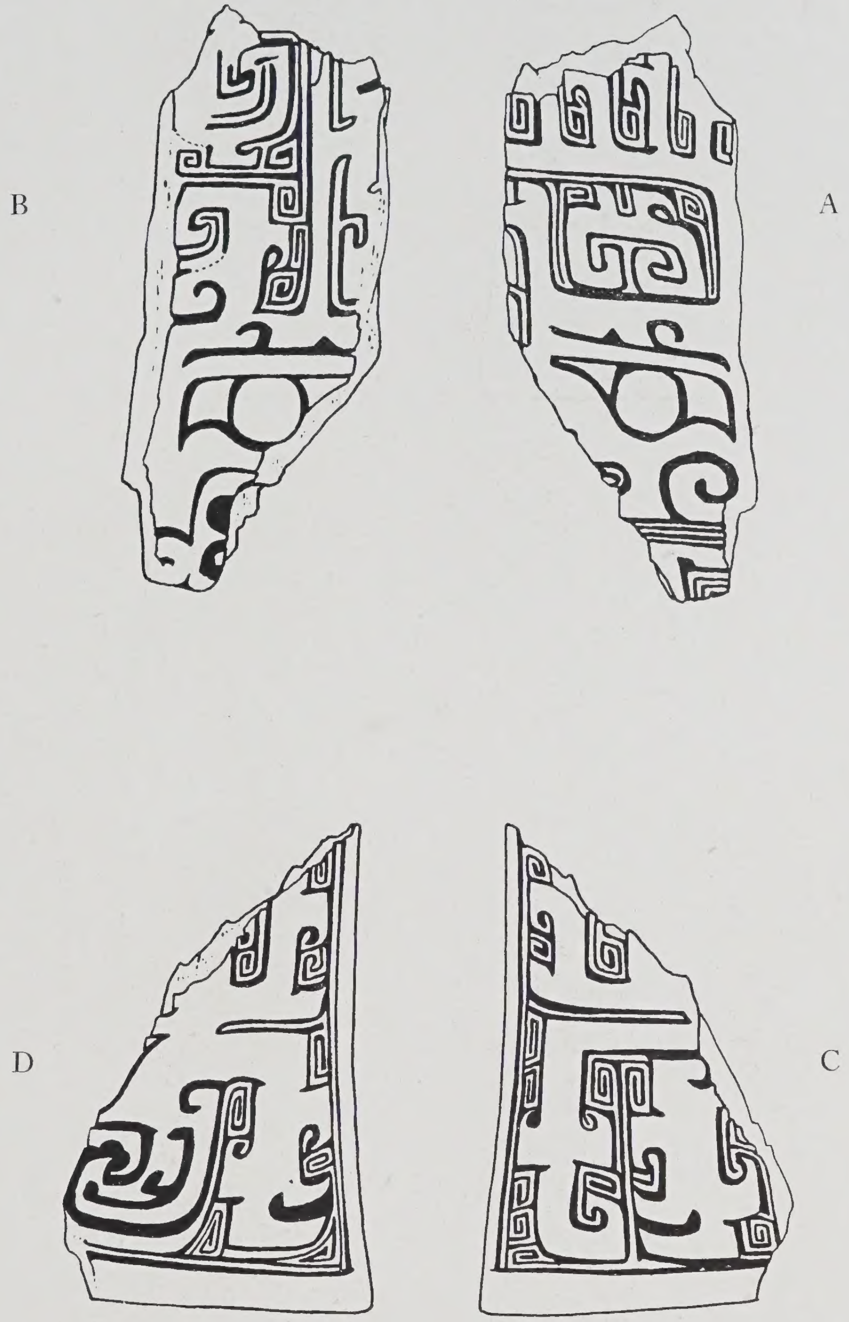
PLATE XXXVIII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6271.
C and D. Obverse and Reverse. NB. 6272.

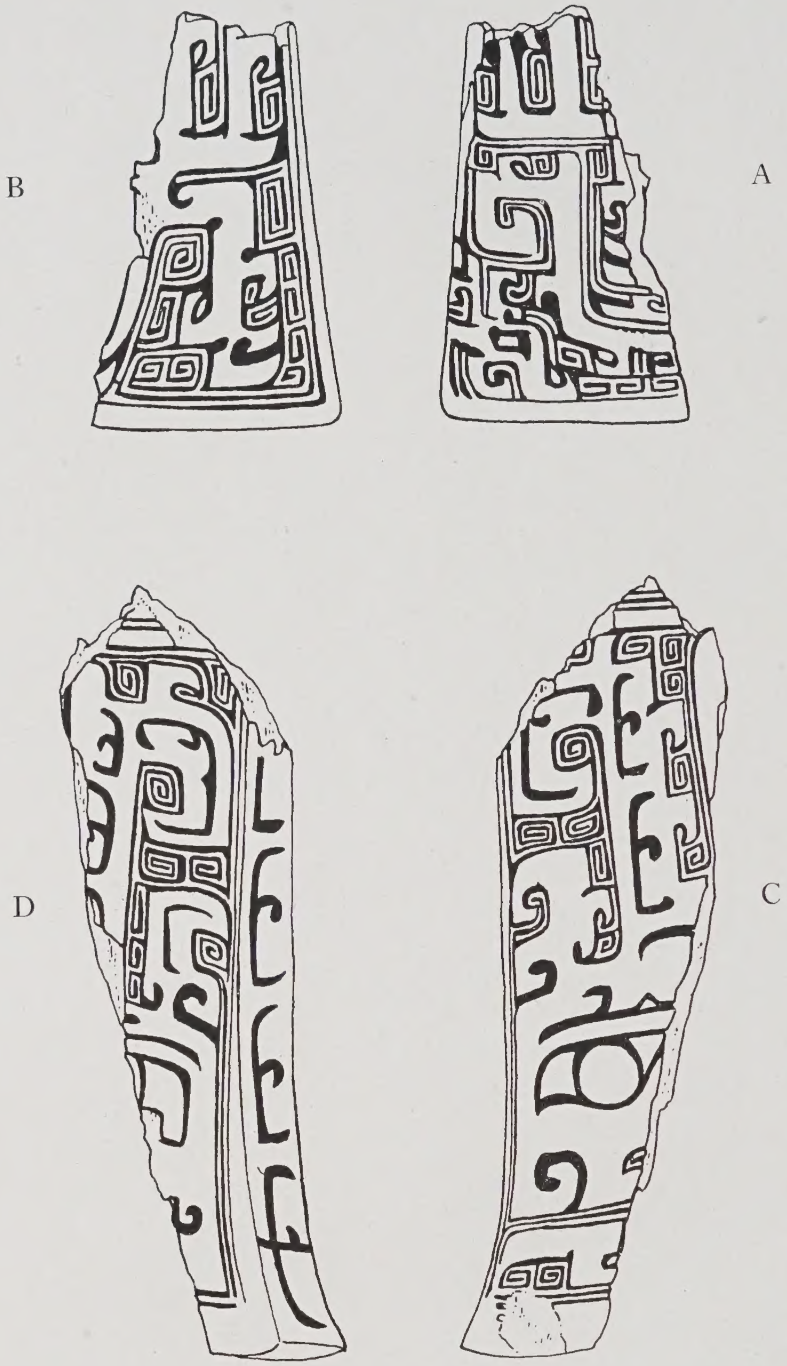
PLATE XXXIX



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6273.
C and D. Obverse and Reverse. NB. 6274.

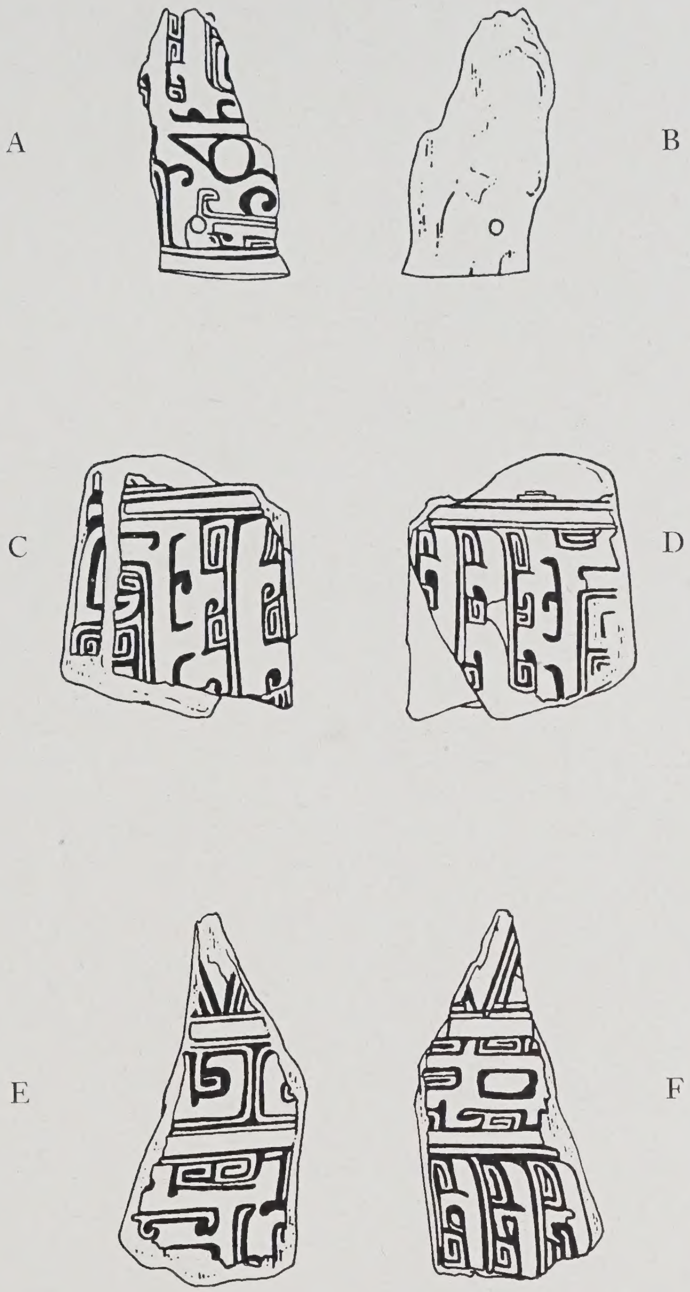
PLATE XL



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6275.
C and D. Obverse and Reverse. NB. 6276.

PLATE XLI



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6277.
C and D. Obverse and Reverse. NB. 6278.
E and F. Obverse and Reverse. NB. 6279.

Plate XXXVI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6267. In this fragment little remains but parts of zones *B* and *C*.

C and D. Obverse and reverse. NB. 6268. Only parts of zones *A* and *B* remain on this fragment, and the main animal which occupies zone *A* is less involved than usual. The crest above the eye in C is the usual feline or tiger ear; that in D is the bottle-shaped horn with the arrow-point design used in Shang to designate roundness.

Plate XXXVII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6269. A very incomplete specimen showing parts of zones *A* and *B*.

C and D. Obverse and reverse. NB. 6270. A specimen containing only zone *B* and small areas of zones *A* and *C*.

Plate XXXVIII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6271. This contains only part of zone *A*. With the exception of the fore-arm and claws the head and main parts of the animal of this zone are missing. Two small *k'uei* dragons are interesting. That in the lower left corner of A is complete, as is also that in the lower right of B, except that the latter is joined up with the body involvement of the large animal.

C and D. Obverse and reverse. NB. 6272. At the bottom of C is a small dragon with bottle-shaped horn, complete except for its head from the eye to the snout. Immediately above, on the left, is a small dragon with feline crest, whose body is lost in the larger animal.

The reverse surface D contains jaw, eye and eyebrow, feline crest, and fore-arm and claws of the usual animal in profile.

Plate XXXIX. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6273. This fragment shows only parts of zone *A*. The designs cover mainly the eye and crest areas of the main animal on each surface.

C and D. Obverse and reverse. NB. 6274. Only the fore-arm and claws of the animal on each surface remain.

Plate XL. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6275. Small portions of butt end of spatula.

C and D. Obverse and reverse. NB. 6276. Portions of zones *A*.

Plate XLI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6277. Fragment from butt end, with perforation. The bone has split and the carved surface of A is missing.

C and D. Obverse and reverse. NB. 6278. This is but a small part of zone *A*. This bone also had split, but the parts have been re-joined.

E and F. Obverse and reverse. NB. 6279. This small fragment comes from the centre of the spatula, and so includes design parts of zones *A*, *B*, and *C*.

III. SMALL SLENDER SPATULAS

Plates XLII-LVII

These slender spatulas, especially the carved and turquoise-inlaid ones, are the most dainty objects, and the carving reveals artistry and craftsmanship of the highest order. The motifs are entirely animal style, but as the previous group of wide spatulas had no frontal animal masks whatever, but kept entirely to profile aspects, so this group uses the mask on all obverse surfaces, and retains the profile for the reverse surfaces, and for middle zone *B*.

The thickened ridge on the reverse of these spatulas is invariably decorated with a meander border, divided into sections by rectangular spaces, which may or may not be inlaid with turquoise.

The obverse aspect requires that the butt end should be at the top in order to view the masks in proper alignment; but the reverse aspect requires the spatula inverted with the butt end at the bottom. There is no apparent reason for this, unless ceremonial use required the butt sometimes at the top and other times at the bottom. If this should be so it would reveal a very meticulous and delicate observance in ceremonial practice.

This group may be subdivided according to the characteristic animal horn or crest of the masks on the obverse surfaces:

1. Plain; XLII
2. Feline; XLIII-XLVIII
3. Ram; XLIX-LI
4. Buffalo; LII-LVII

Plate XLII. Plain bone spatulas.

A and B. Obverse and reverse. NB. 4223.

C. Obverse of broken spatula. NB. 6280.

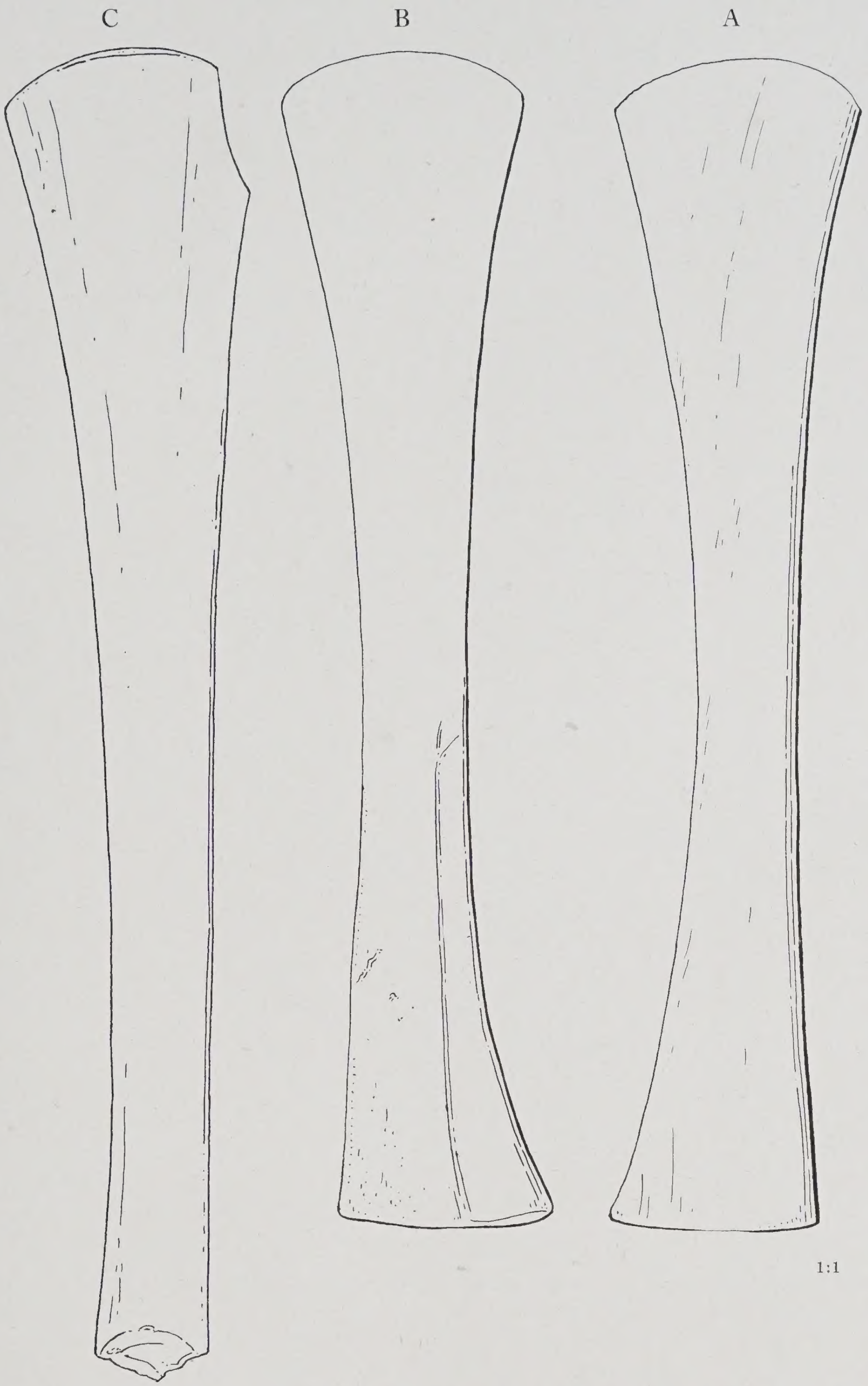
The thickened ridge is to be seen at the right margin of B.

Plate XLIII. Bone spatula fragment.

A and B. Obverse and reverse. NB. 6281. The obverse surface has four feline masks in tier in zone *A*, and a stylized *k'uei* dragon in zone *B*. Zone *C* is lacking.

The reverse surface has the usual marginal ridge, and three profile dragons in tier. All the animals of both surfaces have the feline crest, and there is no turquoise inlay.

PLATE XLII



Plain Bone Spatulas.

A and B. Obverse and Reverse. NB. 4223.
C. Obverse of broken Spatula. NB. 6280.

Plate XLIV. Bone spatula fragment.

A and B. Obverse and reverse. NB. 6282. This fragment includes only the greater part of zone *A*.

On the obverse there are three feline masks in tier, and a small part of a fourth. On the reverse only two profile dragons are evident, and a trace of a third. The bone has been inlaid, but very little turquoise is in position.

Plate XLV. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6283. Small fragment of zone *A*.

C and D. Obverse and reverse. NB. 6284. Incomplete section of zone *A*, complete section of zone *B*, and a trace only of zone *C*.

On the obverse there are three feline masks in tier, with the usual *k'uei* dragon in zone *B*. On the reverse are one complete profile dragon, with part of another above, and a fragmentary end filling a space at the bottom. The stylized dragon in zone *B* is curtailed by the ridge. Inlaid turquoise.

Plate XLVI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6285. Two feline masks only remain on the obverse; and one profile dragon, with compound crest, remains on the reverse. The ridge is plain and round.

C and D. Obverse and reverse. NB. 6286. Only one mask remains on each side of zones *A*; zones *B* are complete, and also the cicada-border of zones *C* though the plain ends are missing. The bone of this fragment is light in colour and of ivory consistency.

Plate XLVII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6287. Two feline masks, and the *k'uei* of zone *B*, are all that remain on the obverse surface. On the reverse there is but one incomplete profile animal, and another compressed one that fills a space adjoining zone *B*. Turquoise inlay.

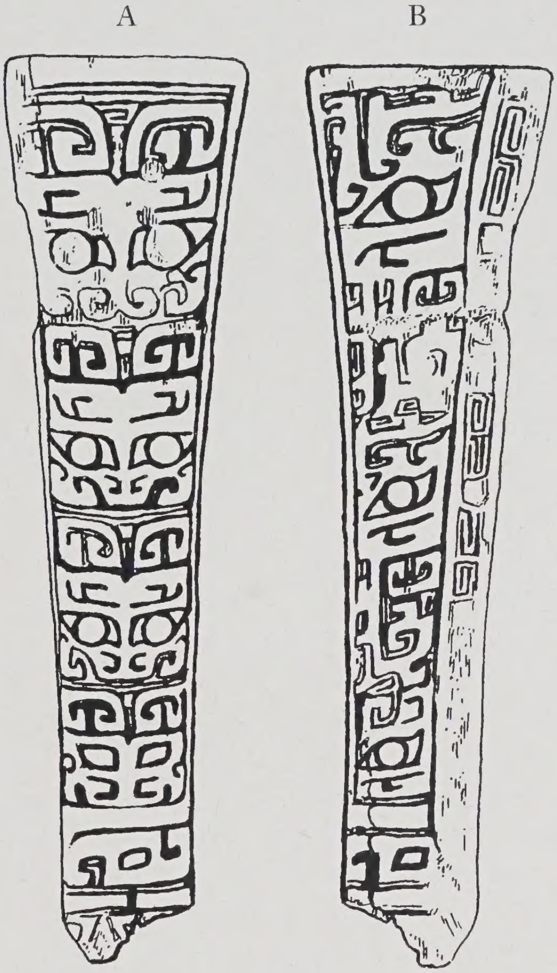
C and D. Obverse and reverse. NB. 6288. This is almost identical with the latter fragment, and is also inlaid with turquoise.

Plate XLVIII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6289. This fragment contains only two feline masks in tier on the obverse; and an incomplete profile dragon, and another small compressed dragon, on the reverse.

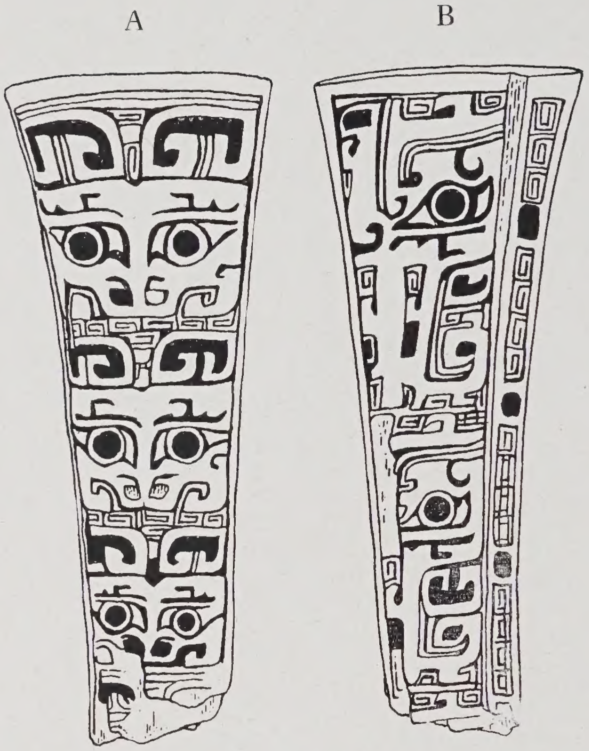
C and D. Obverse and reverse. NB. 6290. The obverse contains the whole of zones *B* and *C*, and one mask of zone *A*. The reverse has the same, except that the profile dragon is the small compressed one. Turquoise inlay.

PLATE XLIII



Bone Spatula Fragment. NB. 6281.
A. Obverse B. Reverse

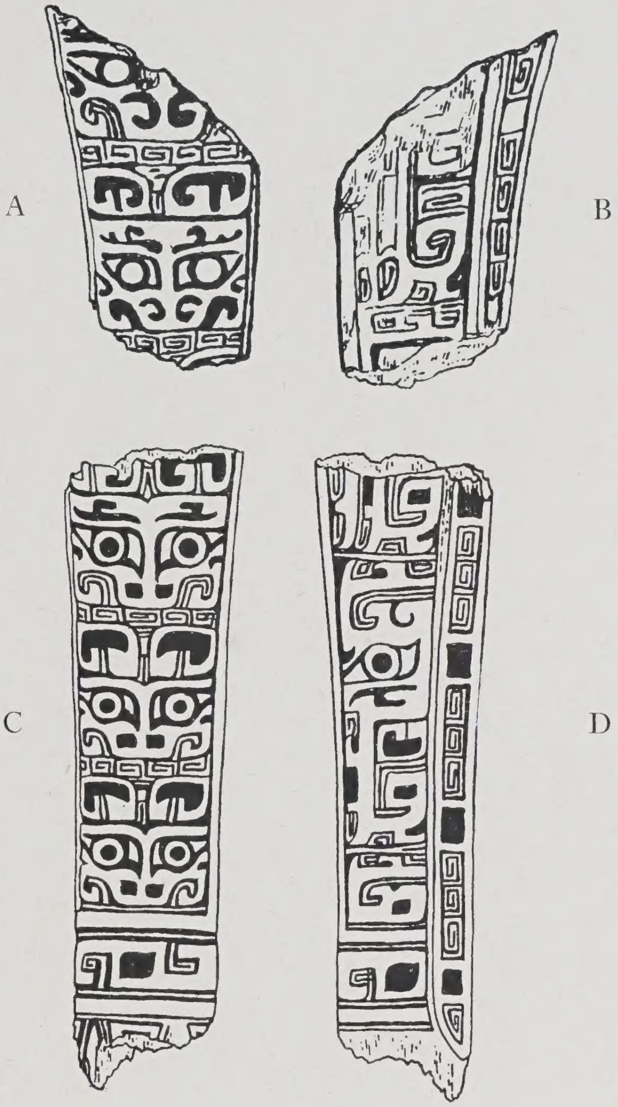
PLATE XLIV



Bone Spatula Fragment. NB. 6282.

A. Obverse B. Reverse

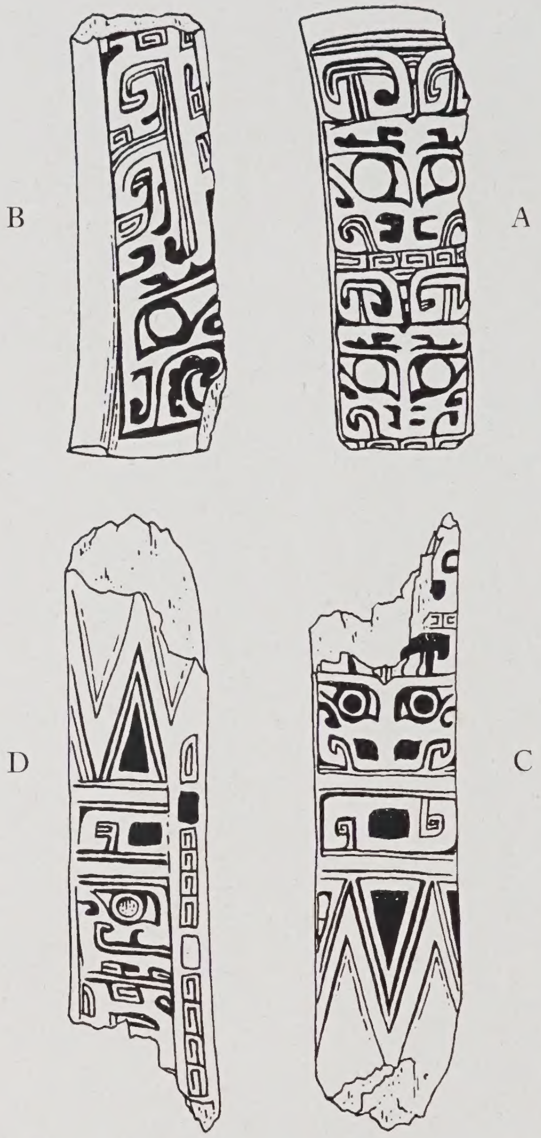
PLATE XLV



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6283.
C and D. Obverse and Reverse. NB. 6284.

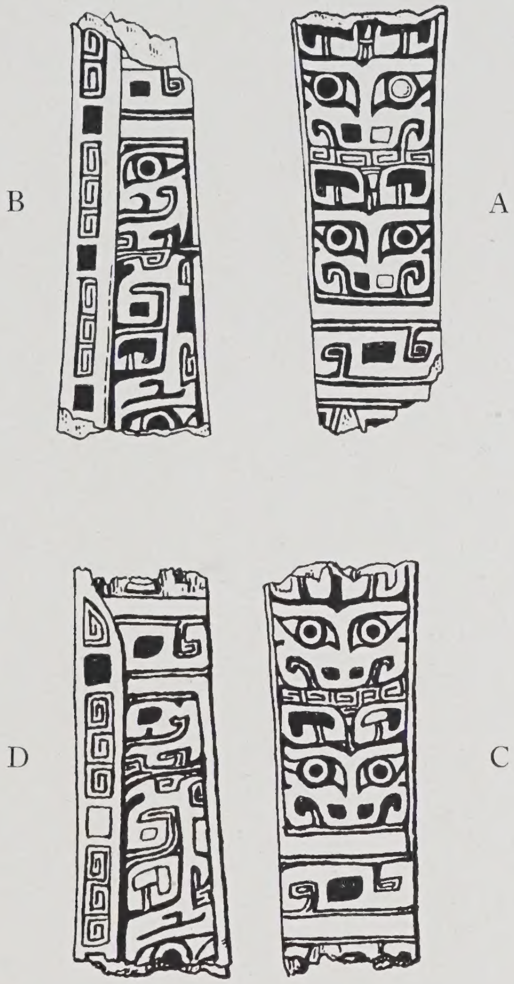
PLATE XLVI



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6285.
C and D. Obverse and Reverse. NB. 6286.

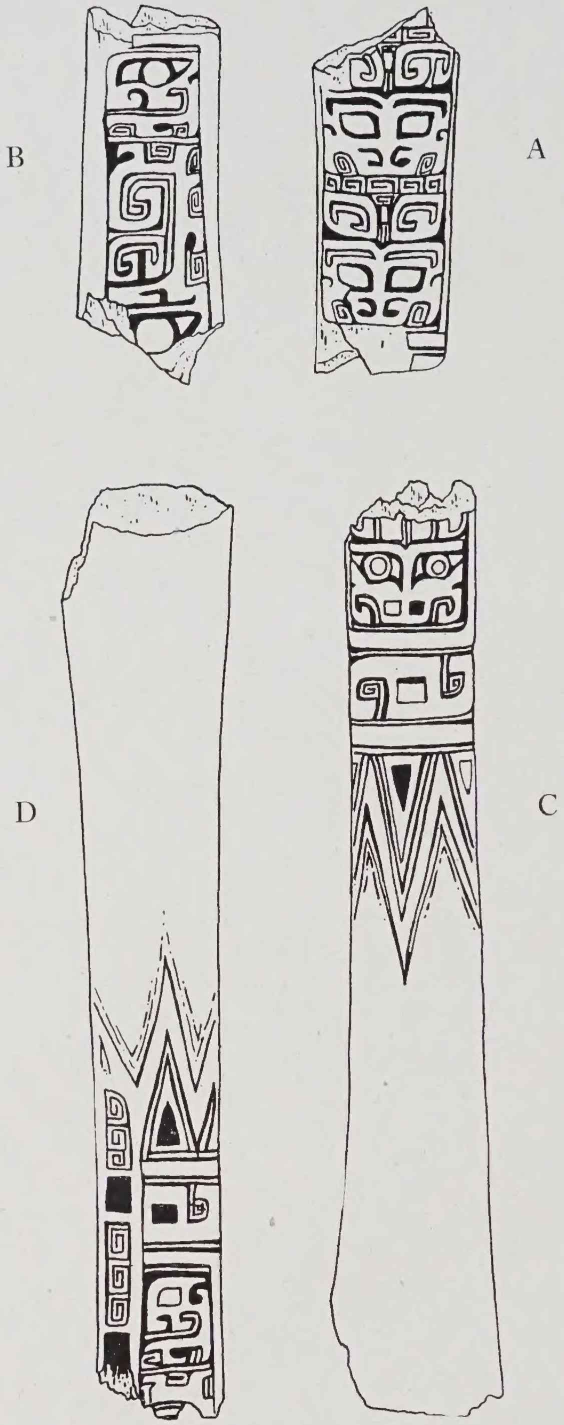
PLATE XLVII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6287.
C and D. Obverse and Reverse. NB. 6288.

PLATE XLVIII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6289.
C and D. Obverse and Reverse. NB. 6290.

Plate XLIX. Bone spatula fragment.

A and B. Obverse and reverse. NB. 6291. The obverse surface contains only zone *A*, which has four ram masks in tier, for the crests appear to be ram's horns. The reverse contains two profile dragons with feline crests, and part of a third animal. There is no inlay.

Plate L. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6292. Small fragment with parts of two masks on the obverse, and part of one profile on the reverse.

C and D. Obverse and reverse. NB. 6293. On the obverse are two ram masks, under which is a *k'uei* symbol as a filler, followed by zone *B* with an almost complete one-eyed *k'uei*. The reverse has a profile dragon, with a small *k'uei* compressed as a filler, and the usual zone *B* design.

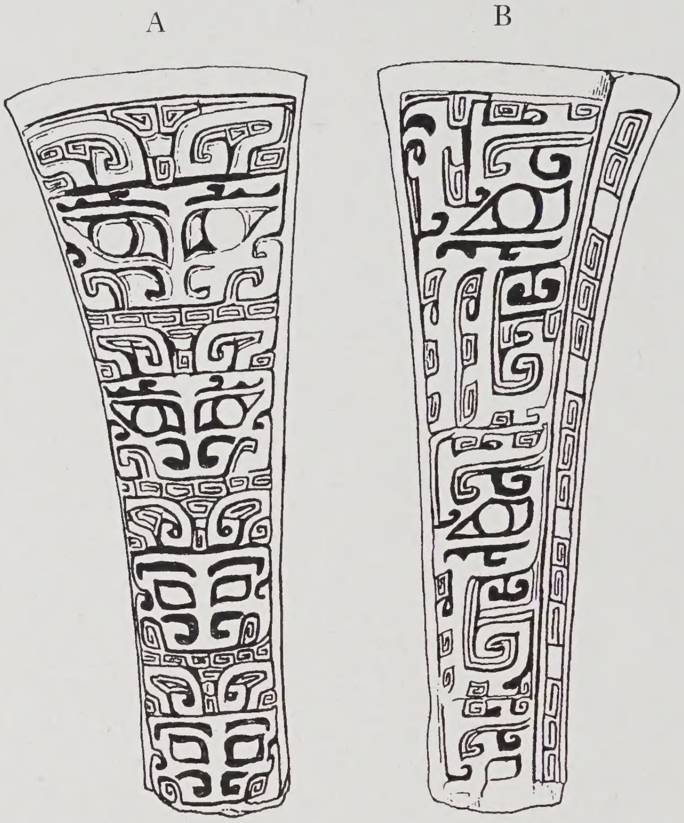
Plate LI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6294. This bone has split leaving only part of a mask on the surface of A. Inlaid turquoise.

C and D. Obverse and reverse. NB. 6295. One mask and parts of two others remain on the obverse surface. On the reverse there is a small compressed dragon, and the body part of a larger animal. Inlaid turquoise.

E and F. Obverse and reverse. NB. 4260. A minute fragment.

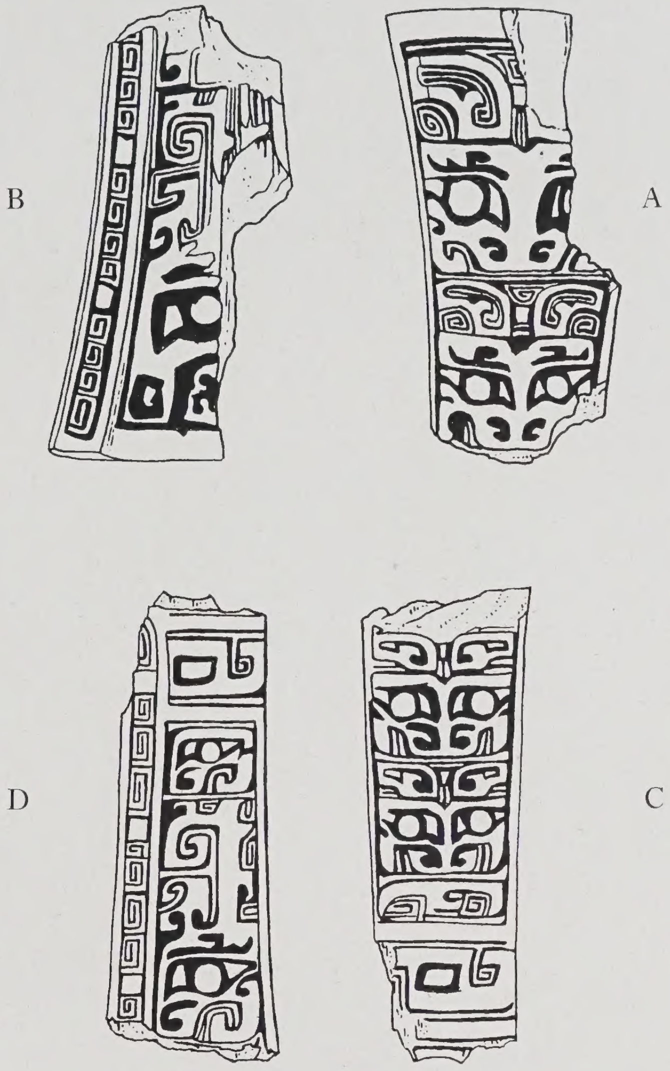
PLATE XLIX



Bone Spatula Fragment. NB. 6291.

A. Obverse B. Reverse

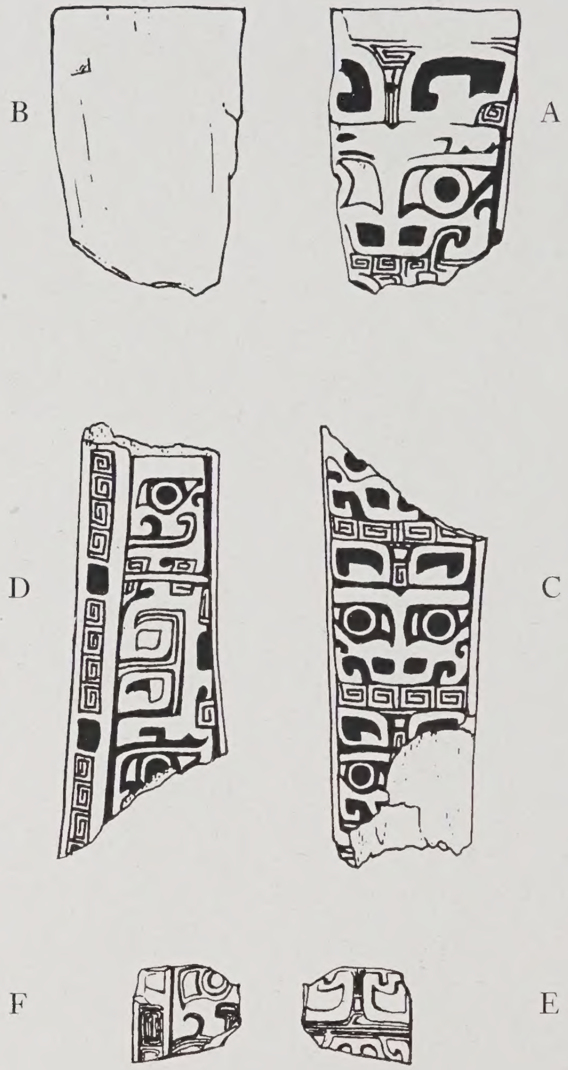
PLATE L



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6292.
C and D. Obverse and Reverse. NB. 6293.

PLATE LI



Bone Spatula Fragments.

A and B.	Obverse and Reverse.	NB. 6294.
C and D.	Obverse and Reverse.	NB. 6295.
E and F.	Obverse and Reverse.	NB. 4260.

Plate LII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6296. Small fragment with one buffalo mask on the obverse, and the fore-part of a profile dragon on the reverse. Inlaid. The horns are probably intended to represent horns of *Bubalus Mephistopheles*, a buffalo type once existent in the Anyang area but now extinct.

C and D. Obverse and reverse. NB. 6297. Two buffalo masks on the obverse, and a profile dragon and part of another on the reverse. Inlaid turquoise.

Plate LIII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6298. One mask with short horns, probably of *Bubalus brevicornis*, on the obverse; and part of profile dragon on the reverse. Inlaid.

C and D. Obverse and reverse. NB. 6299. Two masks on the obverse; one profile dragon, and a small one, on the reverse. Inlaid.

Plate LIV. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6300. Part of a mask in A; part of profile dragon in B.

C and D. Obverse and reverse. NB. 6301. Three masks in A; two profile dragons in B.

Plate LV. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6302. Two masks on obverse; one profile dragon and part of another on reverse. Inlaid.

C and D. Obverse and reverse. NB. 6303. One complete and two uncomplete masks on obverse; one complete profile dragon and part of another on reverse. Inlaid.

Plate LVI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6304. Incomplete mask. Inlaid.

C and D. Obverse and reverse. NB. 6305. One mask on A. Inlaid.

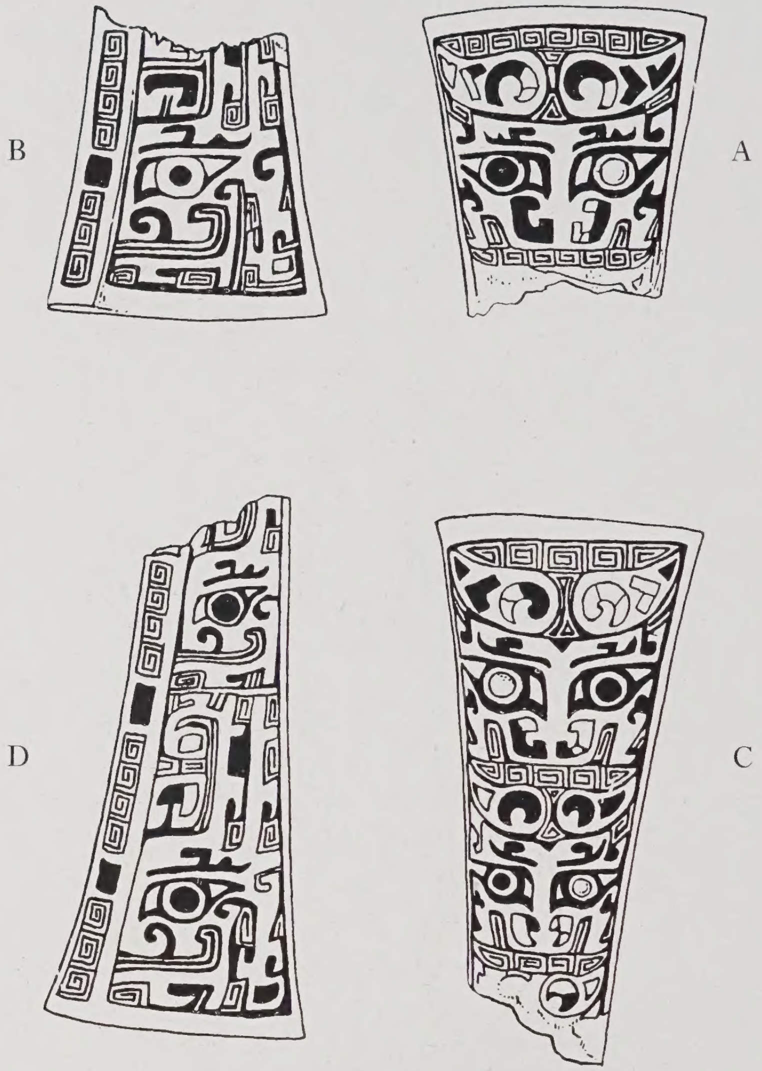
E and F. Obverse and reverse. NB. 6306. Two masks and small part of zone *B* on the obverse; small compressed dragon, and part of profile dragon, on the reverse. Inlaid.

Plate LVII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6307. Greater part of zone *C* on both surfaces.

C and D. Obverse and reverse. NB. 6308. On the obverse are a part of a mask of zone *A*, and the *k'uei* and cicada-border of zones *B* and *C*. On the reverse there is the same design except that a small *k'uei* takes the place of the mask.

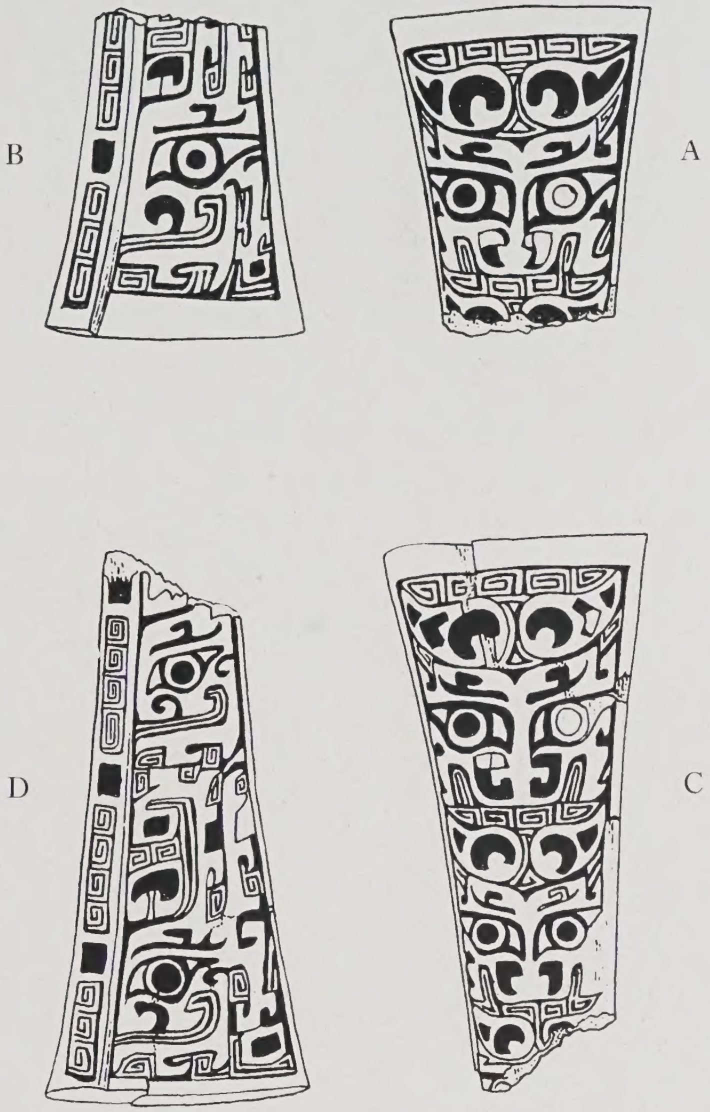
PLATE LII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6296.
C and D. Obverse and Reverse. NB. 6297.

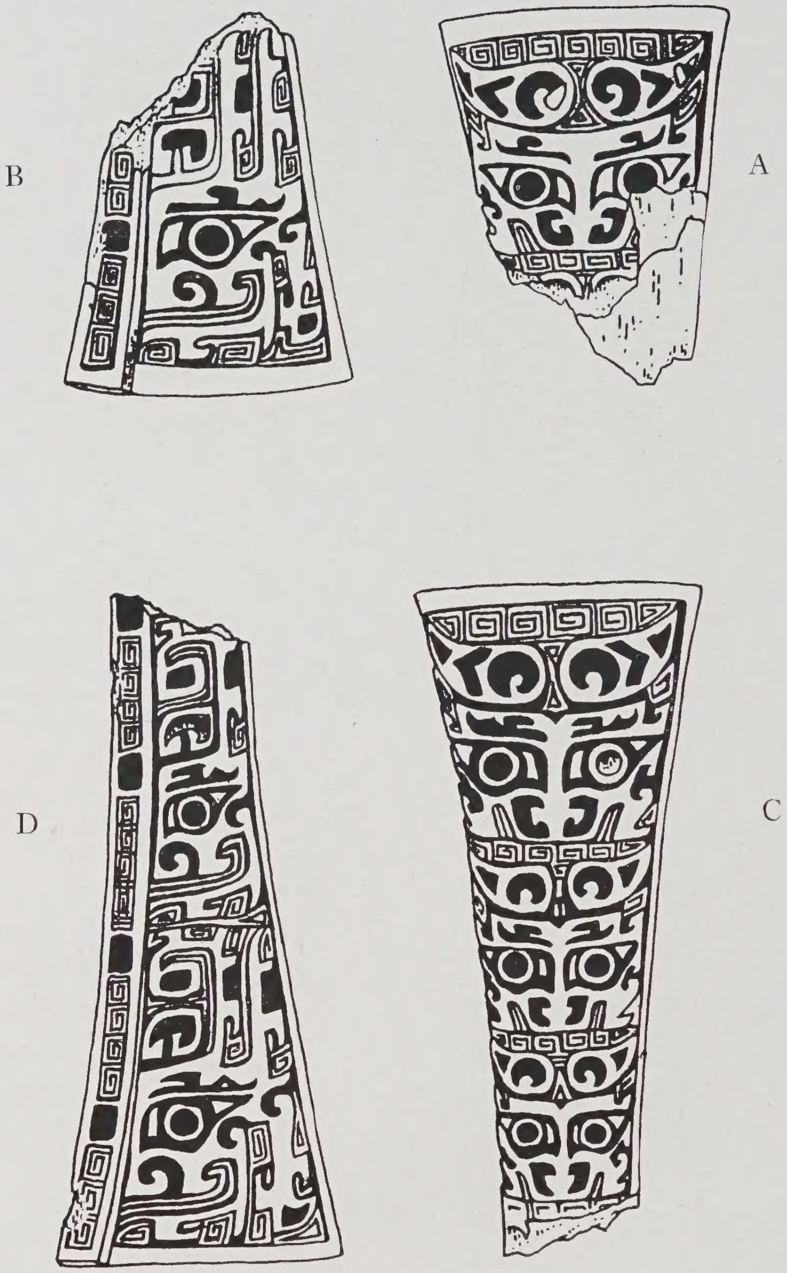
PLATE LIII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6298.
C and D. Obverse and Reverse. NB. 6299.

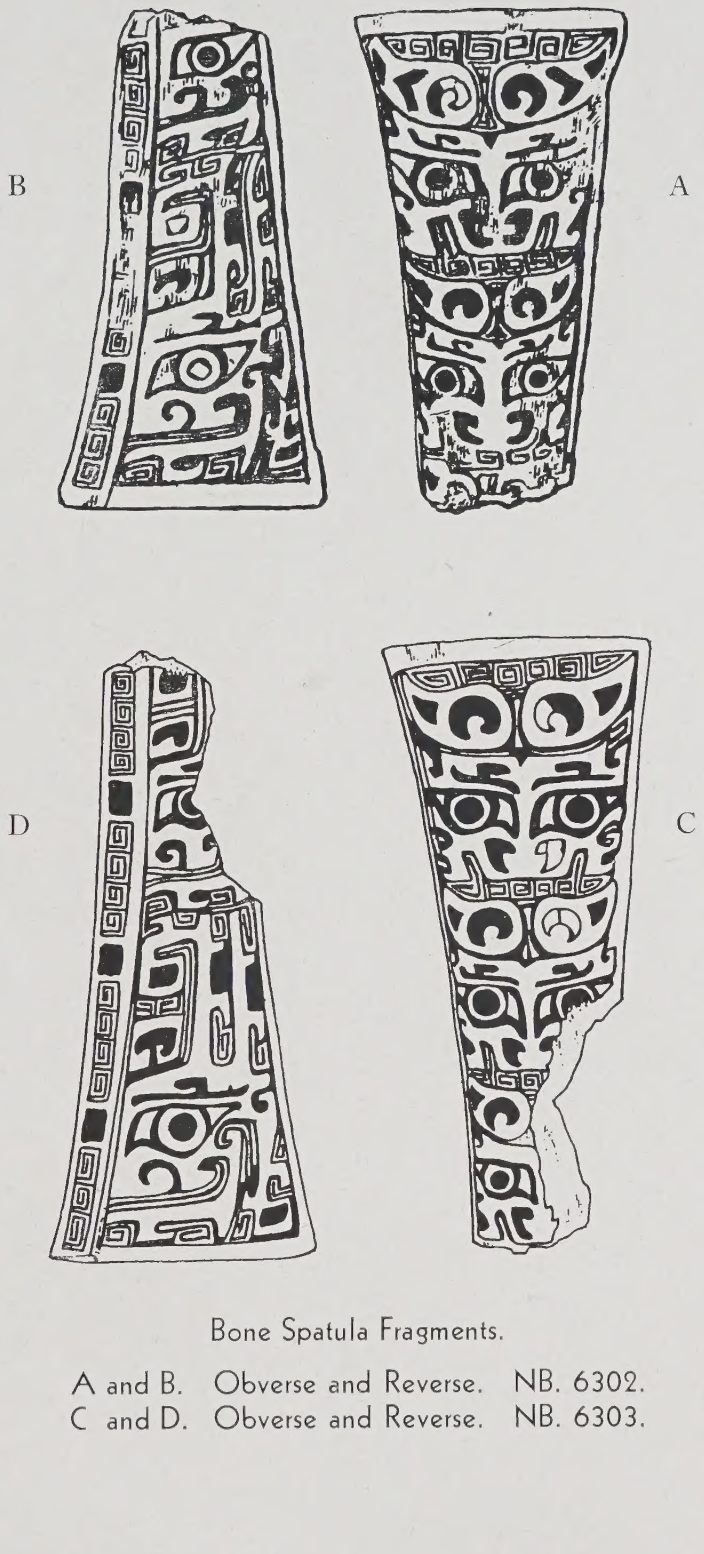
PLATE LIV



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6300.
C and D. Obverse and Reverse. NB. 6301.

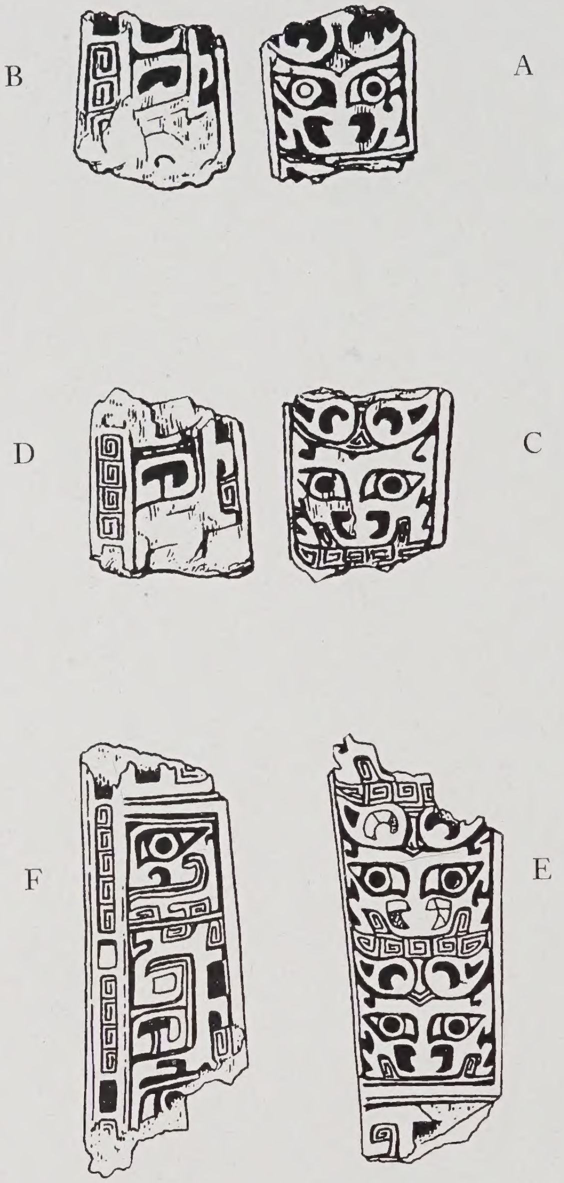
PLATE LV



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6302.
C and D. Obverse and Reverse. NB. 6303.

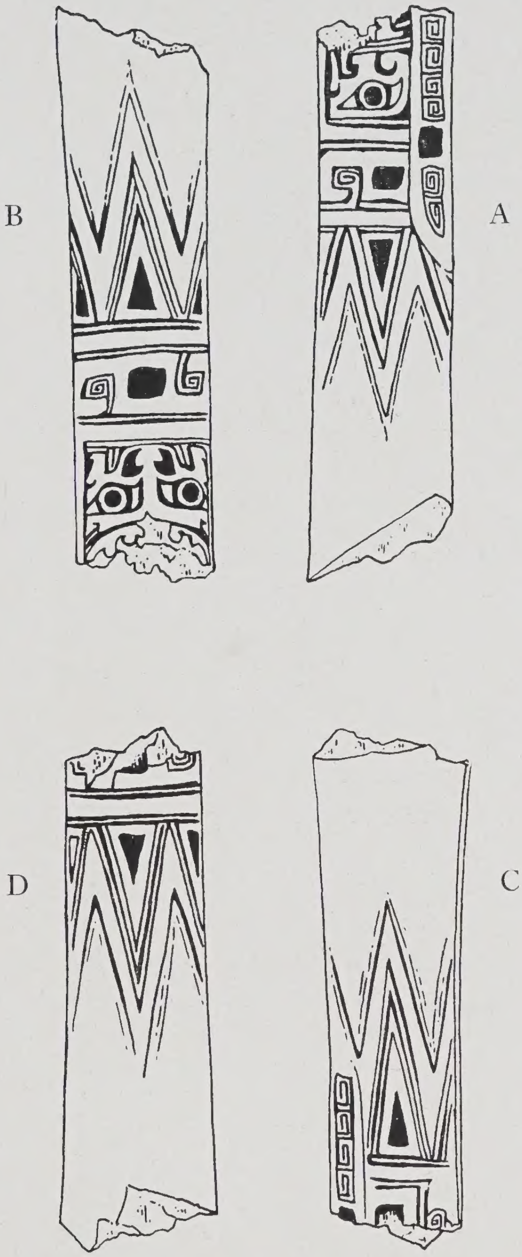
PLATE LVI



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6304.
C and D. Obverse and Reverse. NB. 6305.
E and F. Obverse and Reverse. NB. 6306.

PLATE LVII



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 6307.
C and D. Obverse and Reverse. NB. 6308.

IV. LONG RIB SPATULAS

Plates LVIII-LXIV

These ribs usually have the inner surface and the core of the bone removed, which allows for a ridge along the margin similar to that of the conventional type of spatula. The carving on these bones is different from that of other spatulas, and is more crude. Even so, simple points of turquoise inlay are common, and inscriptions are also found on them (*Illus. 5: A*).

Plate LVIII. Plain bone spatula fragment.

A and B. Obverse and reverse. NB. 6309. This rib originally would be at least three times the length of this fragment. The butt end of this bone is perforated for thong.

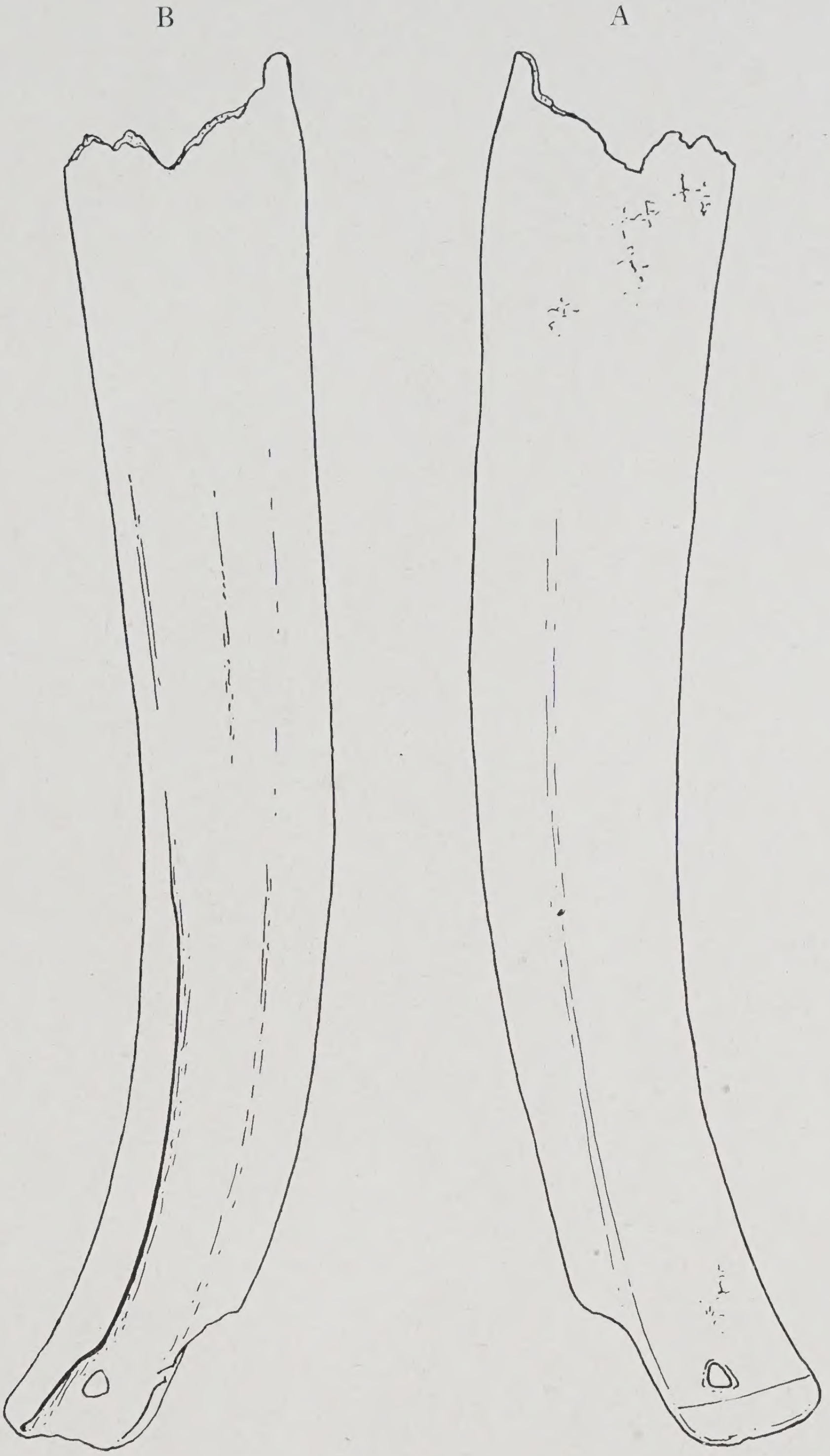
Plate LIX. Carved spatula fragment.

A and B. Obverse and reverse. NB. 6310. This bone might well be classed with the group of spatulas having reptile designs (*Plates* XV-XXIV) and it is particularly comparable with that of *Plate* XVIII, except that this bone has had the inner or reverse surface gouged out.

The whole of zone *A* is covered in this fragment, but zones *B* and *C* have apparently broken off and are missing.

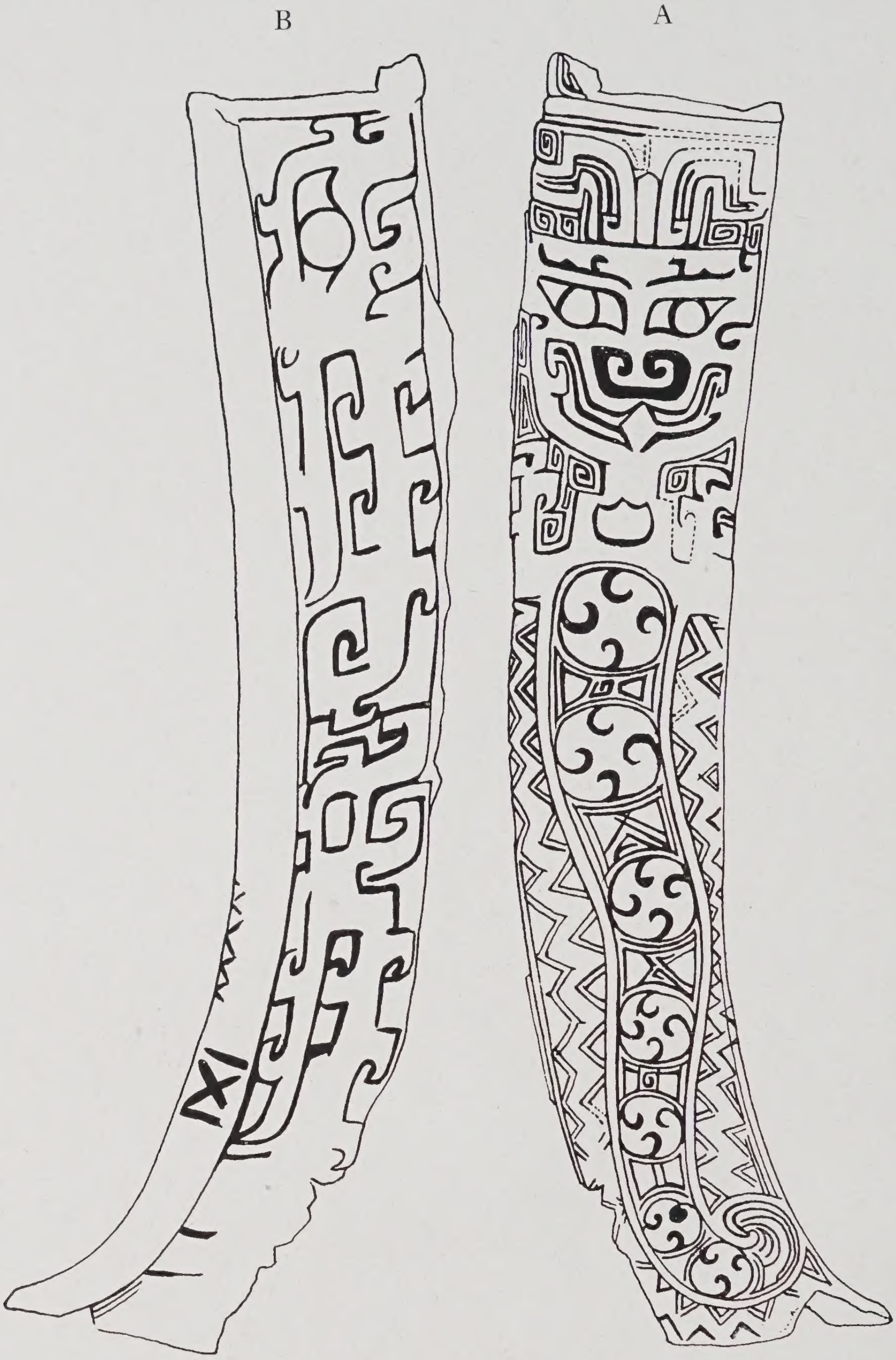
A. The design on the obverse is that of a sinuous lizard-like creature lying flat with both fore-legs stretched out on either side from the shoulders. The head is fully reverted showing a direct frontal mask. The crest is a pair of ram horns. On the shoulders between the legs is a single shield-like scale. Behind this is a series of graded rosettes, seven in number, which taper down to the curled tail tip. These rosettes have quadruple and triple spiral designs which are definitely suggestive of swastikas (*cp. Plates* LXXI: *A* and CIX). Along both sides of the reptile are wavy zigzag lines which suggest water.

B. The reverse surface has a ridge on the left side, with the figure "five" incised on it. In the deep depression along the ridge are two *k'uei* dragons, in simple line incision, following one after the other and heading upwards (*cp. Illus. 5: A, obverse*).



Plain Bone Spatula Fragment. NB. 6309.
A. Obverse B. Reverse

PLATE LIX



Bone Spatula Fragment.

A. Obverse B. Reverse. NB. 6310.
(Cp. Plates XV-XXIV)

Plate LX. Bone spatula fragment.

A and B. Obverse and reverse. NB. 4306. The obverse contains a feline frontal mask in zone *A*, a *k'uei* dragon in zone *B*, and part of the cicada-border and plain area in zone *C*. The reverse contains the head of a profile dragon, a *k'uei* dragon of zone *B*, and cicada-border of zone *C*. The linear incisions are all very simple and crude.

Plate LXI. Bone spatula fragments.

A and B. Obverse and reverse. NB. 6311. Scale: one-half. When complete this bone would probably exceed two feet in length. All of zone *A* is missing, most of zone *B*, and a part of the plain tip of zone *C*. The design on both sides is mainly that of the cicada-border.

Plate LXII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 3036. The reverse is quite plain. The obverse contains two masks, one above the other, in a very unusual stylization. It has a sparse inlay of turquoise, and the crest is probably a stylization of stag horns. This is not a unique example of carving and design (*cp. C. Hentze: Objets rituals, etc.; Anvers, 1936, Fig. 191 and Pl. I: D*).

C and D. Obverse and reverse. NB. 6312. The reverse is quite plain; the obverse has crude line drawings which are quite undecipherable, yet there had been deep inlays of turquoise.

Plate LXIII. Bone spatula fragments.

A and B. Obverse and reverse. NB. 4243. Both sides have crude incised designs, with cavities for inlay of turquoise in the eye and crest of A.

C and D. Obverse and reverse. NB. 4236. Crude drawings of two profile dragons on each surface. The lower pair of dragons have each a compound horn or crest.

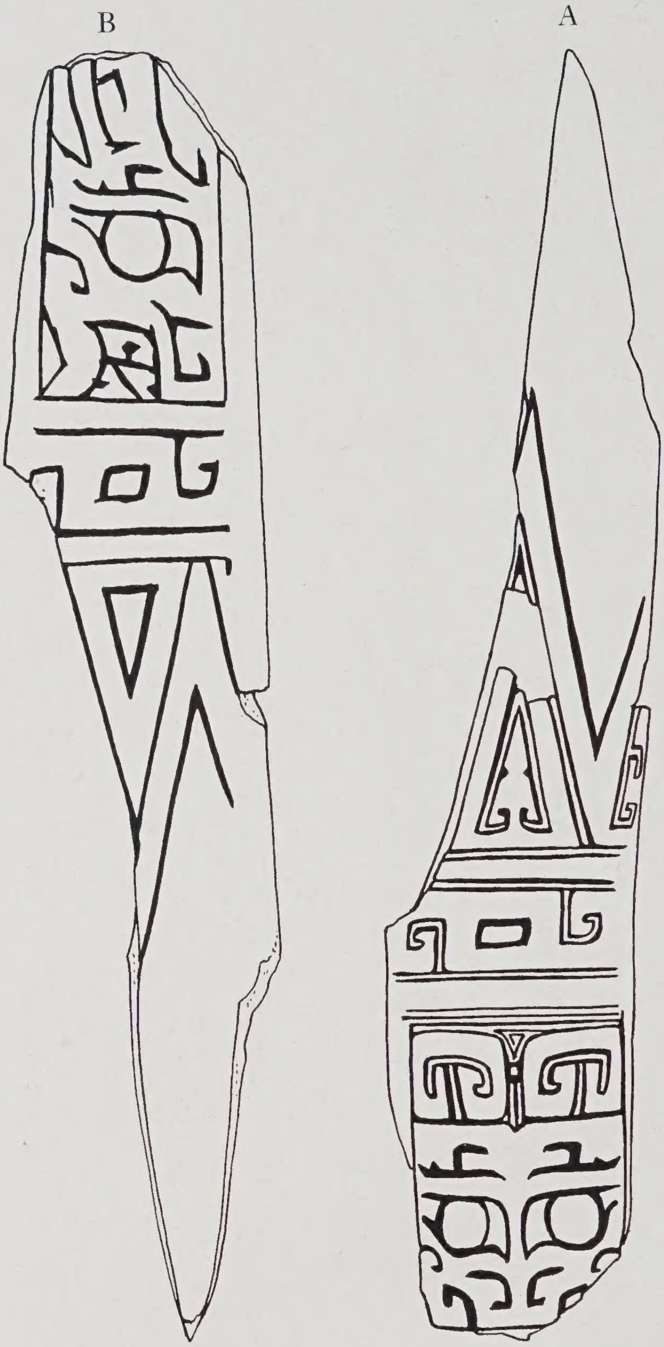
Plate LXIV. Bone spatula fragments.

A and B. Obverse and reverse. NB. 4255. Small fragment with incomplete animal designs.

C and D. Obverse and reverse. NB. 4261. Small fragment.

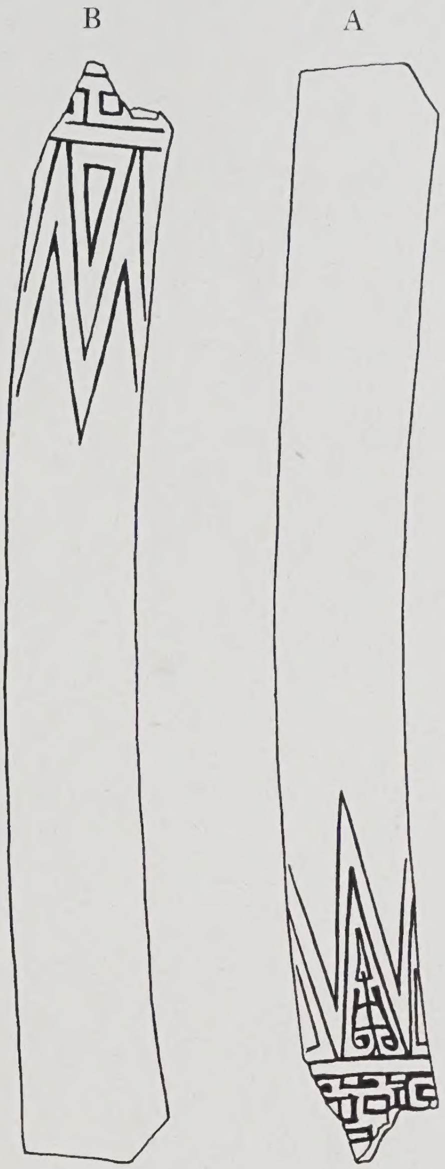
E and F. Obverse and reverse. NB. 4245. Fragmentary profiles on each surface. The ridge on the reverse surface gives the figure "three."

PLATE LX



Bone Spatula Fragment.

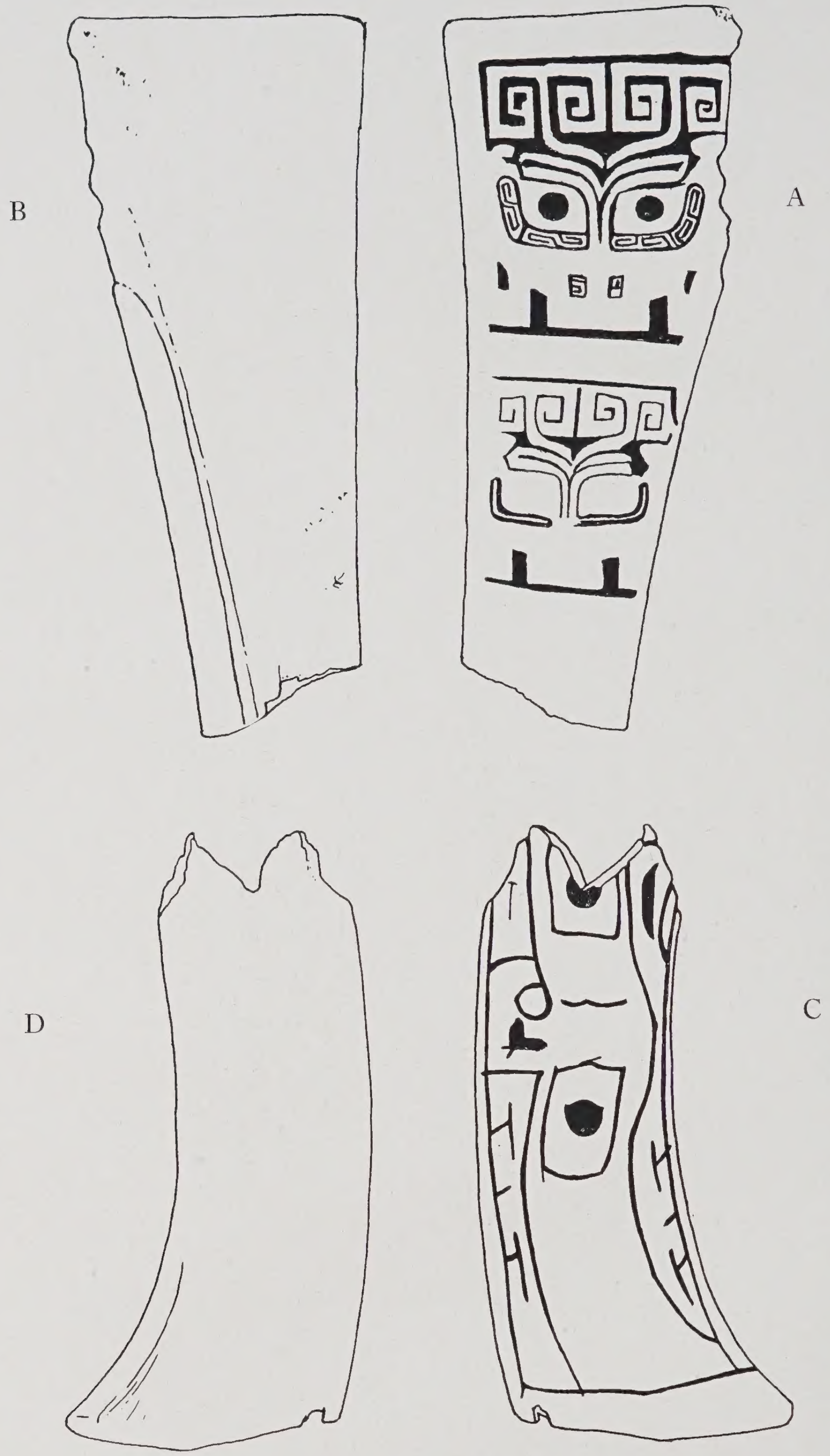
A. Obverse B. Reverse. NB. 4306.



Bone Spatula Fragment.

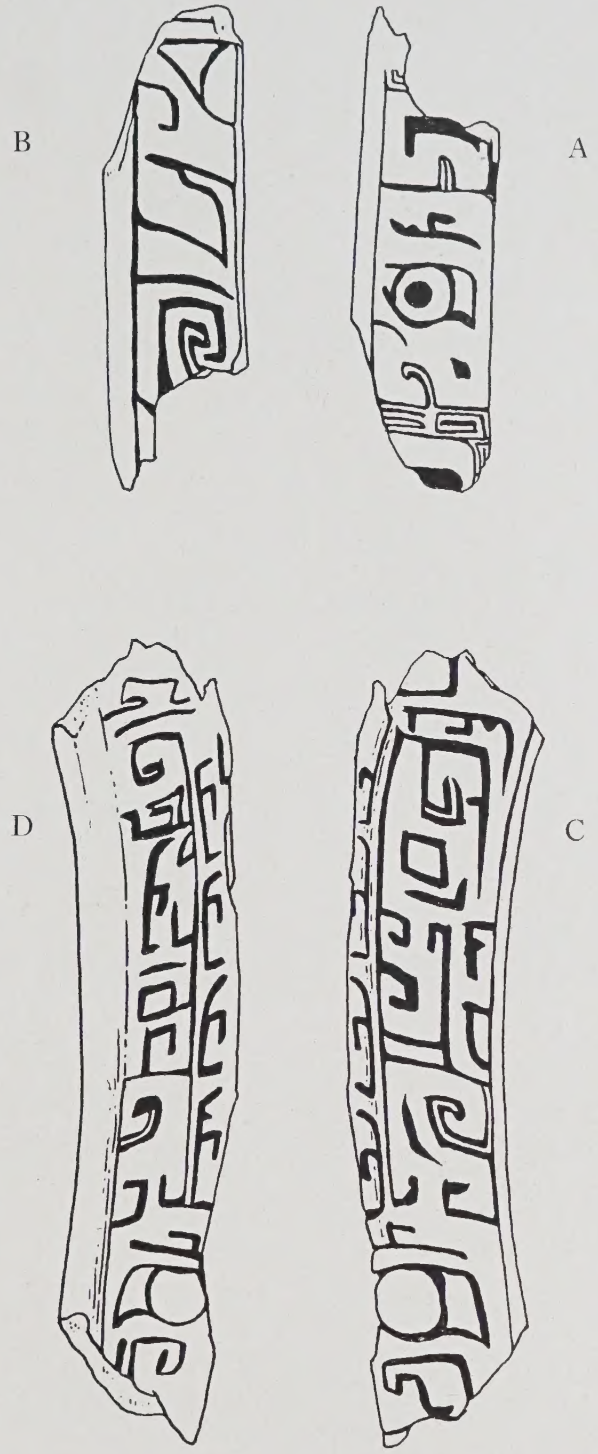
A. Obverse B. Reverse. NB. 6311.
Scale: one-half

PLATE LXII



Bone Spatula Fragments.

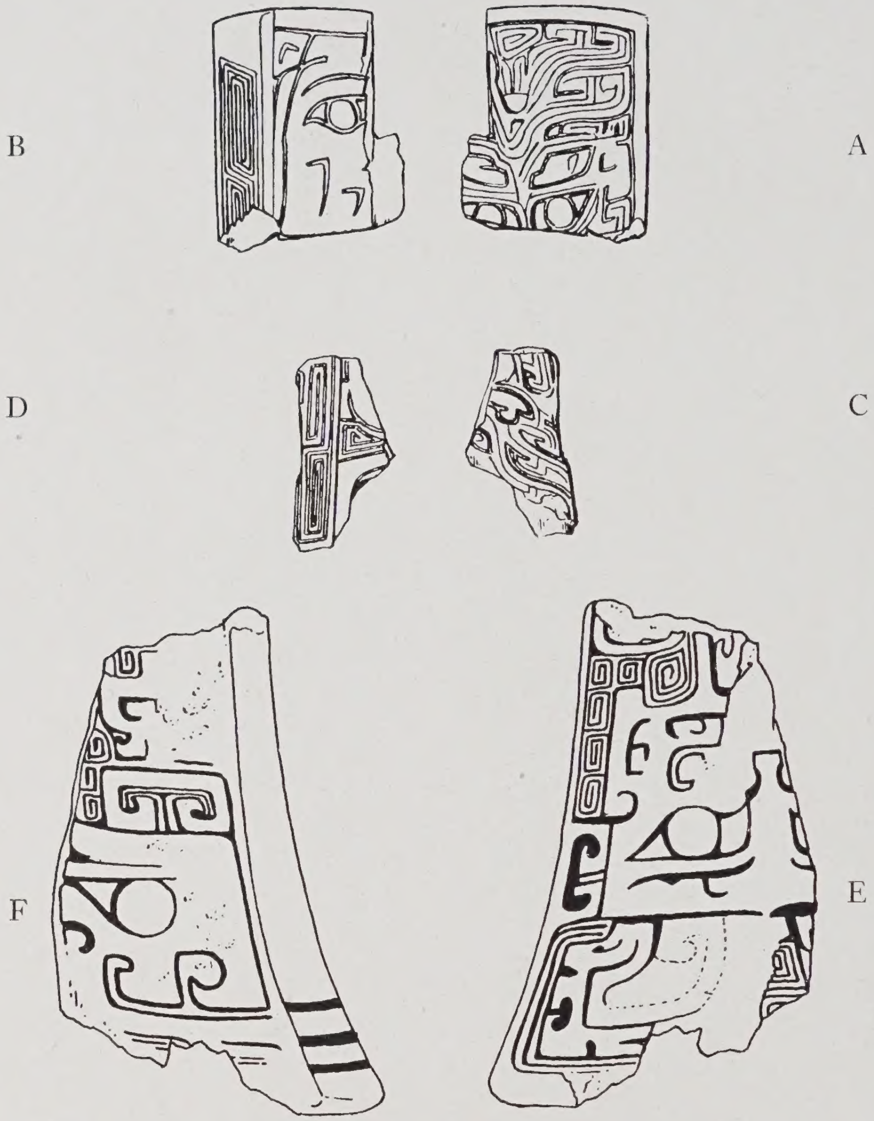
A and B. Obverse and Reverse. NB. 3036.
C and D. Obverse and Reverse. NB. 6312.



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 4243.
C and D. Obverse and Reverse. NB. 4236.

PLATE LXIV



Bone Spatula Fragments.

A and B. Obverse and Reverse. NB. 4255.
C and D. Obverse and Reverse. NB. 4261.
E and F. Obverse and Reverse. NB. 4245.

C. VARIOUS BONE OBJECTS

I. PLAIN BONE OBJECTS

Plates LXV-LXX

Quantities of unworked bone were unearthed in the excavations at Anyang, which seemed to show that bone work had been a most flourishing industry. Buffalo and ox bones formed the bulk of the bone supplies, but there were skeletal materials of many other animals, such as tiger, deer, elephant, whale, sheep, and goat.

Plate LXV. Fragment of stag antler. NB. 6313.

The bone had been sawn at the stub end.

This deer is known as *Elaphuras Menziesianus* Sow.

Plate LXVI. Fragments of stag antler.

A. NB. 6314. Sawn at the stub end.
B. NB. 6315.

Plate LXVII. Bone stock for implements.

A. Animals leg-bone section. NB. 6316.
B. Incompleted bone awl. NB. 6317.

Plate LXVIII. Animal tusks.

A.	Tiger tusk.	NB. 6318.
B.	Tiger tusk.	NB. 3323.
C.	Tusk.	NB. 6319.

Plate LXIX. Plain bone plaques.

A. NB. 208 B. NB. 209 C. NB. 210

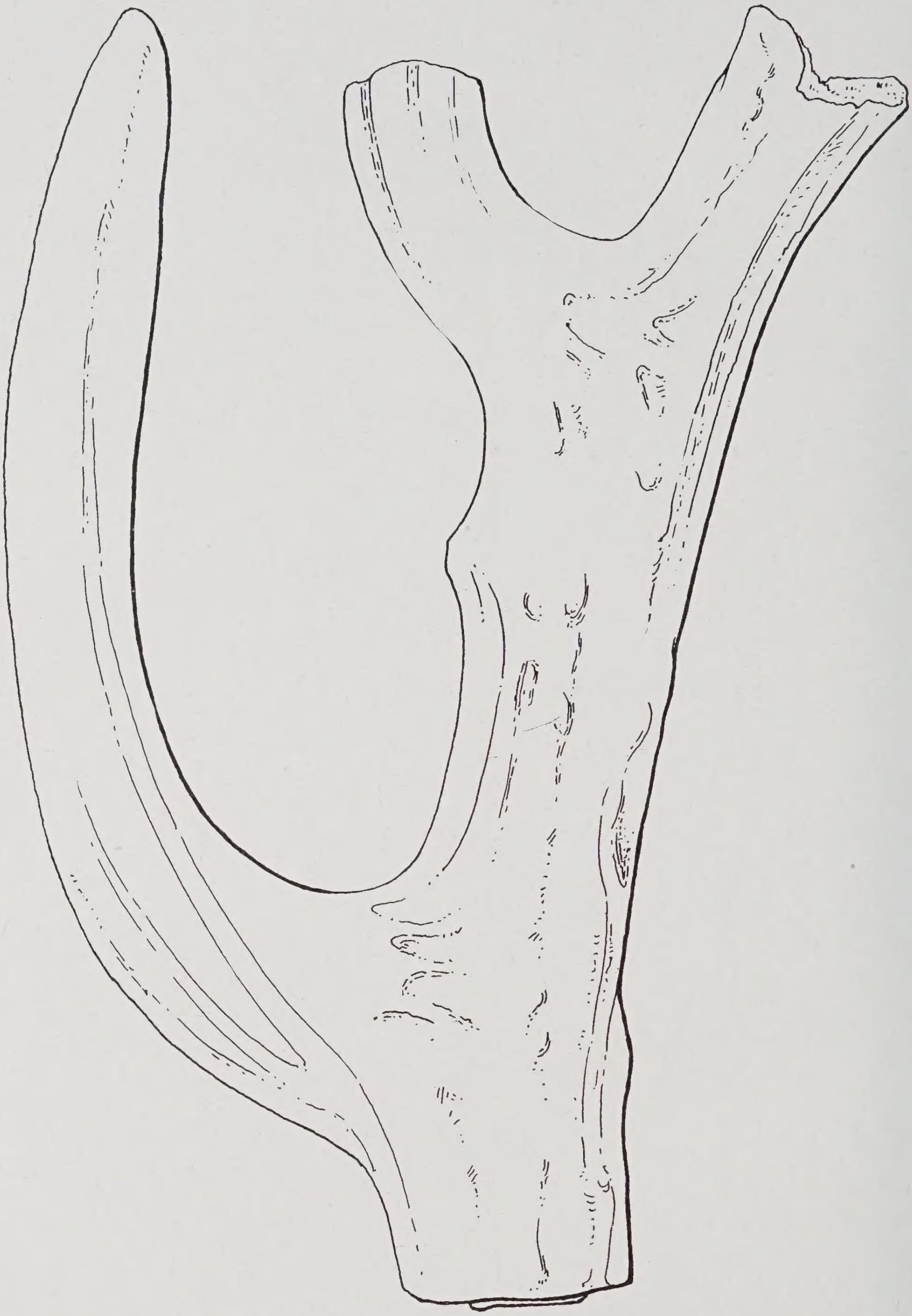
These three flat bones all have two perforations at one end. They may have been clappers, but are more likely to have been writing tablets or plaques. For this purpose the holes at the end could well have been for the binding thongs, on the same principle of stringing together bamboo strips to form the "bamboo books" in ancient times.

Plate LXX. Plain bone objects.

A. Fragment of stag antler. NB. 6320. This had been cut and polished for a purpose not yet known. The large perforation was probably for an attaching peg.

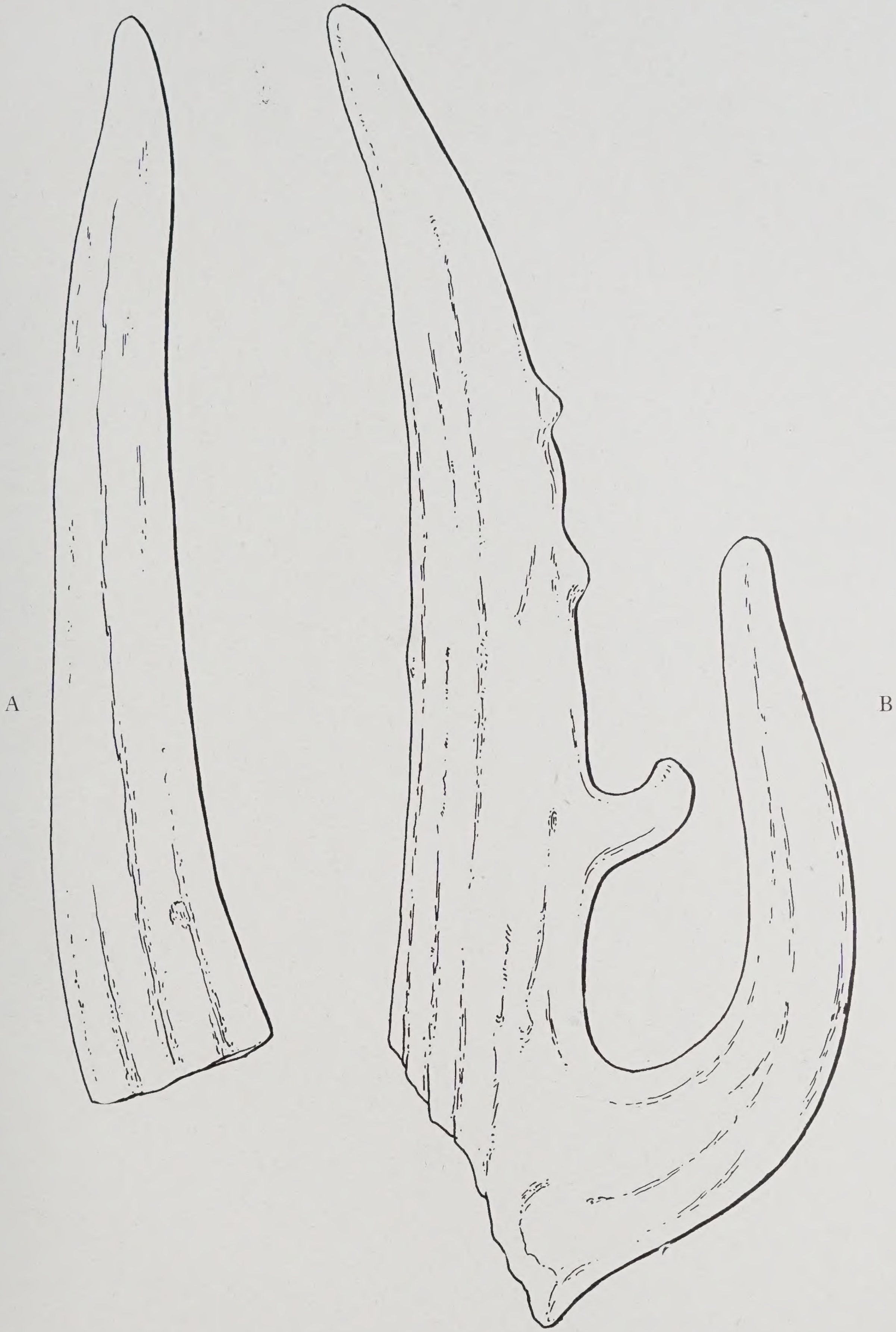
B. Ivory pillar-shaped object. NB. 4283. Use unknown.

C. Bone object. NB. 4282. Probably a strap connector. A hole pierces the object lengthwise possibly to hold a pin for the strap.



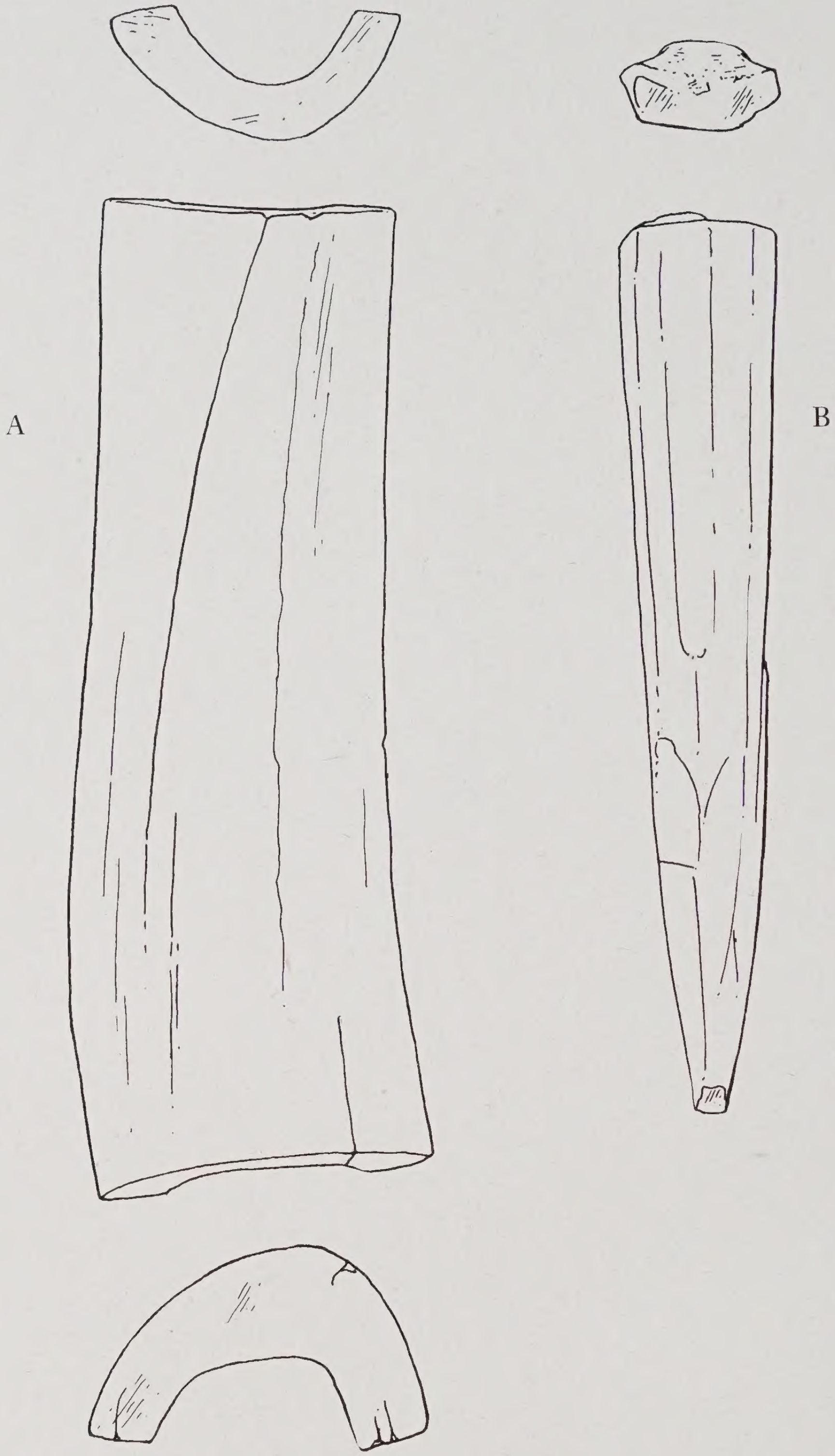
Fragment of Stag Antler. NB. 6313.

PLATE LXVI



Fragments of Stag Antler.
A. NB. 6314 B. NB. 6315

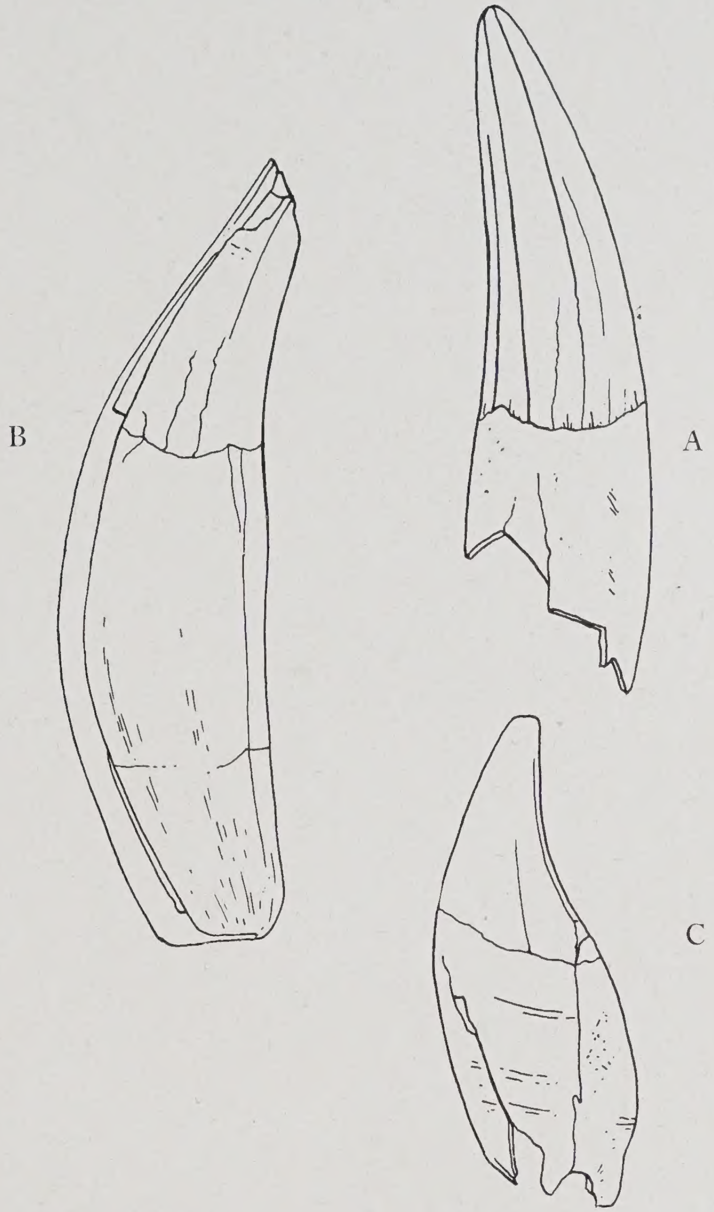
PLATE LXVII



1:1

Bone Stock for Implements.
A. NB. 6316   B. NB. 6317

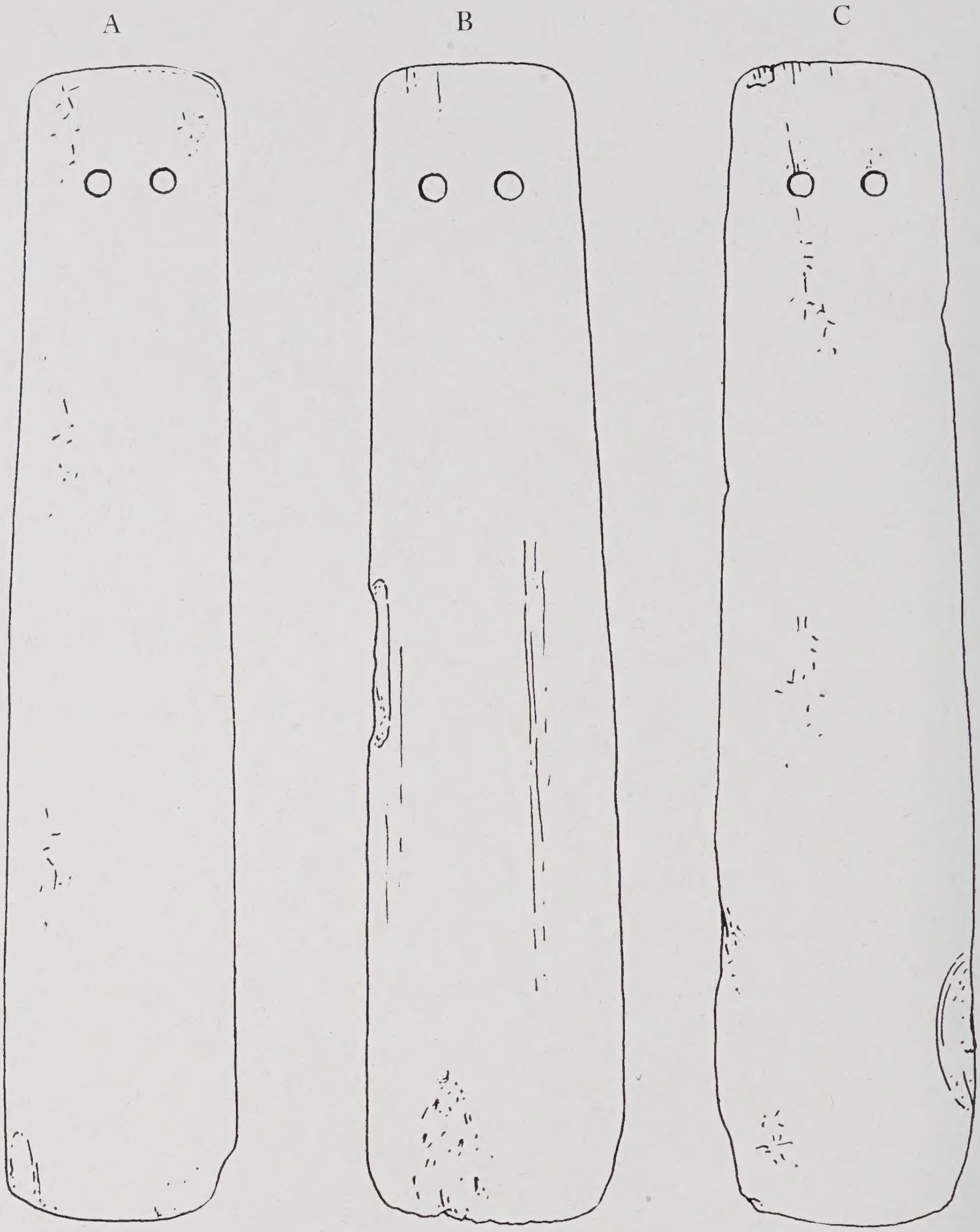
PLATE LXVIII



Animal Tusks.

A. NB. 6318 B. NB. 3323 C. NB. 6319

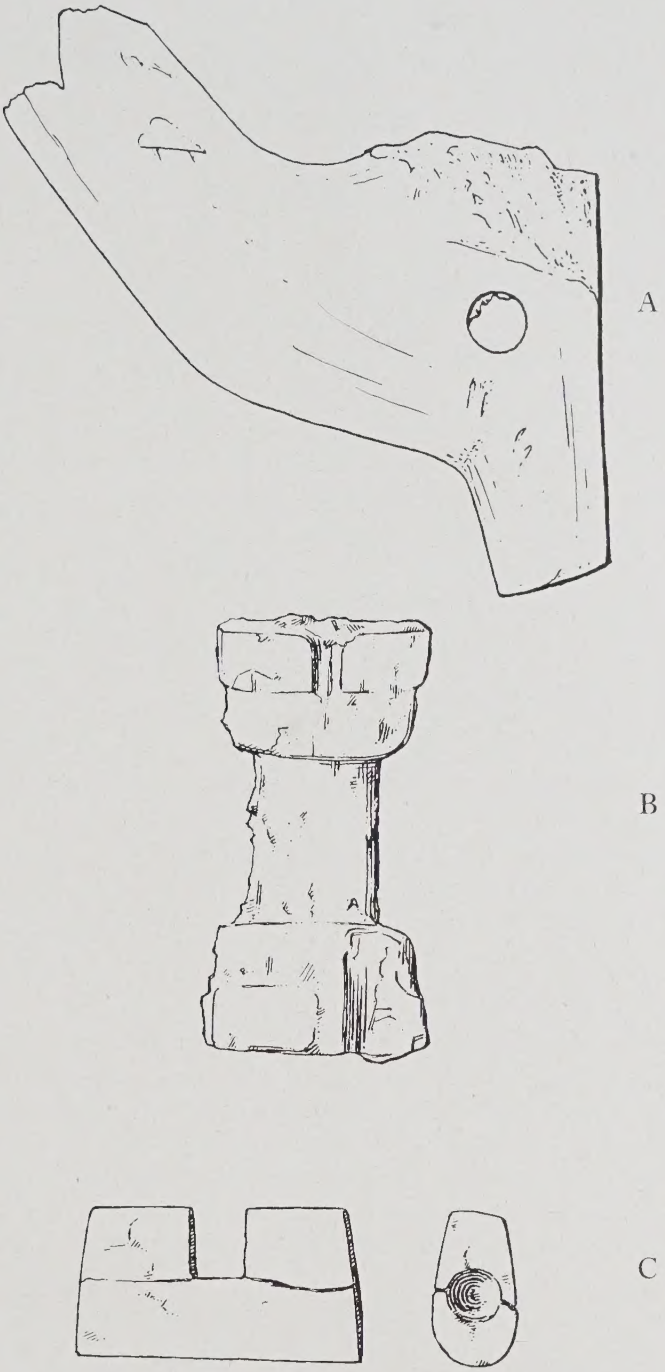
PLATE LXIX



Plain Bone Plaques.

A. NB. 208 B. NB. 209 C. NB. 210

PLATE LXX



Plain Bone Objects.

A. NB. 6320 B. NB. 4283 C. NB. 4282

II. CARVED IVORY AND BONE OBJECTS

Plates LXXI-LXXX

Plate LXXI. Ivory staff-head. NB. 4235.

This decorated ivory staff-head is hollowed out to hold a wooden staff, and is perforated for an attaching pin.

The top surface (A) is deeply incised in a design of four commas and a central eye, giving a swastika effect (*cp.* *Pl.* LIX). The design had been inlaid with turquoise.

Below the top is a series of border designs (B).

The topmost is a border of cicada design, followed by a rounded beading with arrowpoint design. Then comes a band of *k'uei* dragons having compound crests, and below this again is another and larger cicada-border, with a plain zone. These four borders or bands were all inlaid with turquoise, of which a few fragments are still in place.

Plate LXXII. Carved bone and ivory objects.

A. Carved ivory ring, slightly elliptical. NB. 6321. Side and top views. The carving around the side is a sequence of four naturalistic cicada forms. Use unknown.

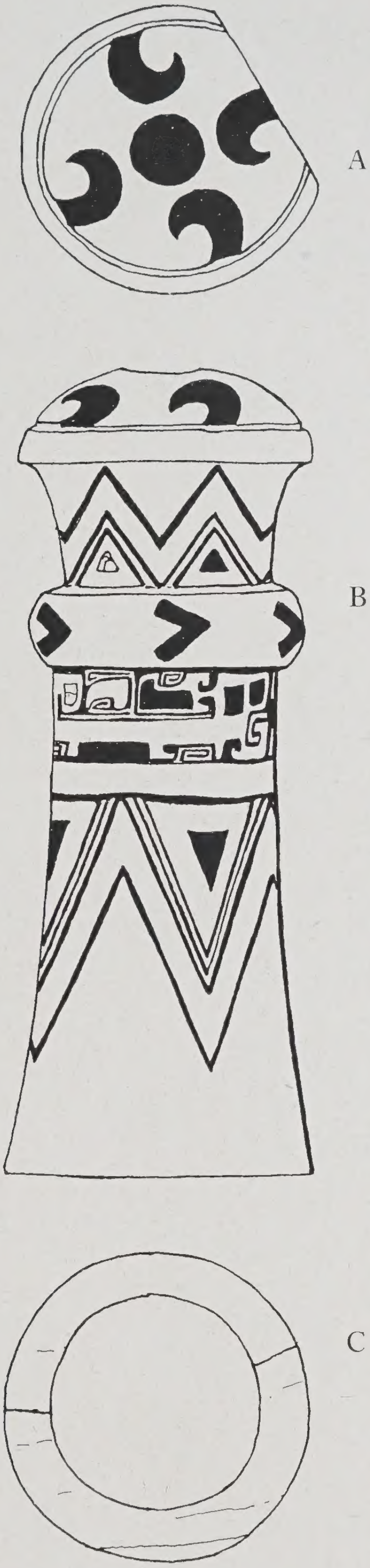
B. Carved bone staff-head. NB. 4220. Side and top views. The top carving is that of a coiled *k'uei* dragon, with compound horn, tusked mouth and turned-up snout, and a tapering body decorated with two wavy lines.

The side of the object is decorated with two feline frontal masks, similar to those generally found in Shang design.

The bone is hollowed out, and a bone pin, which is still in position, attached it to the wooden staff.

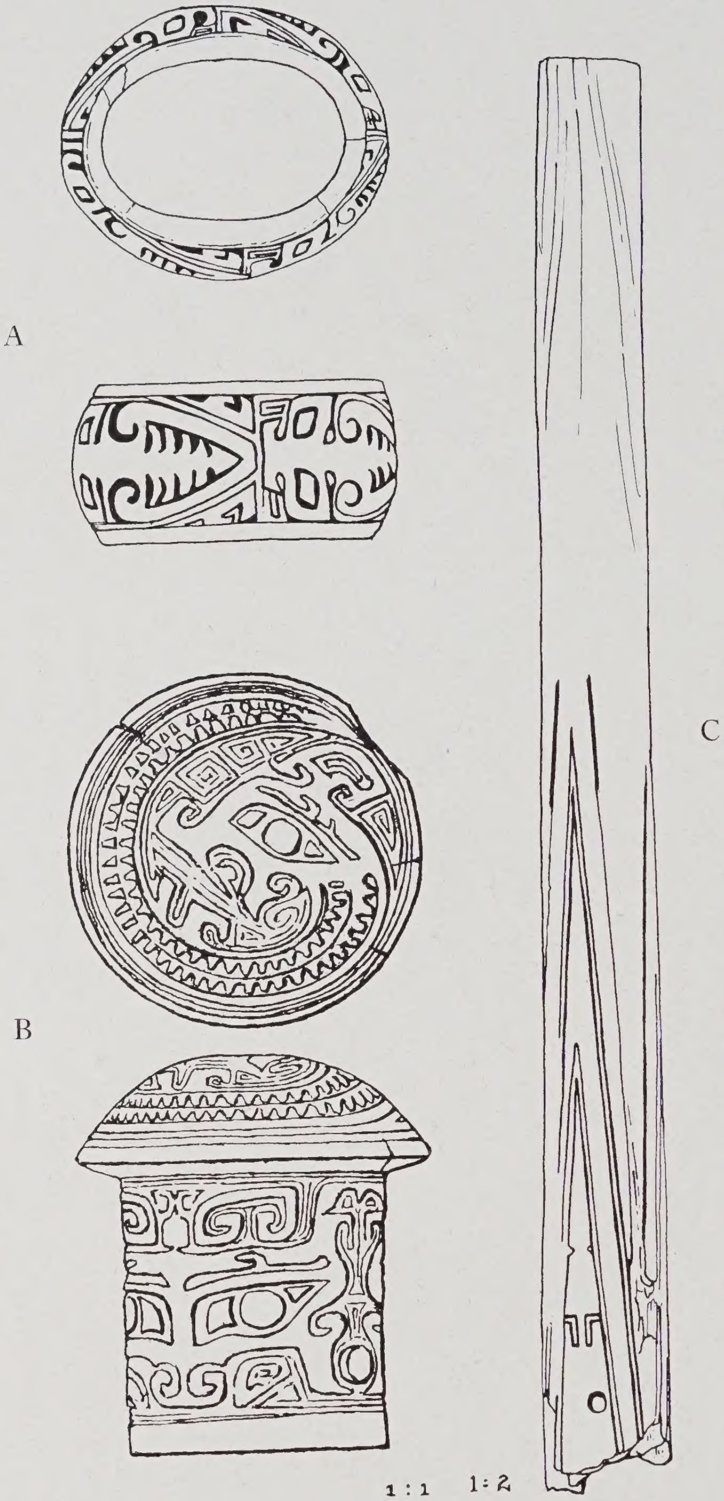
C. Narwhal ivory staff-end. NB. 6322. Scale: one-half. The tip is solid, but a central cavity reaches almost to the apex. The lower end is broken off and missing, and the carved decoration at that point is that of the stylized cicada-border. A perforation for pin is at the bottom, probably for attaching of the staff when it was socketed in the central cavity. Striations in the ivory twisted in a left-hand spiral, as is usual in the narwhal tusk. A fragment of what appears to be a similar object was also found by the Academia Sinica at Anyang (*Catalogue of Chinese Government Exhibition in London; Nanking 1936, Vol. IV, pp. 141 and 150; number AS 0.097*).

PLATE LXXI



Ivory Staff-Head. NB. 4235.

PLATE LXXII



Carved Bone and Ivory Objects.

A. Ivory Ring. NB. 6321 B. Bone Staff-Head. NB. 4220.
C. Narwhal Ivory Staff-End. NB. 6322.
Scale: A and B natural size; C one-half size.

Plate LXXIII. Bone tubes.

A. Carved bone tube. NB. 2969. This tube is of a uniform size throughout its length, and is decorated at both ends with carved cross-hatching and arrowpoint designs. Use unknown (*cp. Pl.* LXXXII: *C*).

B. Carved bone tube of hour-glass shape. NB. 4221. The upper and lower halves are decorated with triangular cicada-design borders, inlaid with turquoise. Its use is unknown, but it may possibly have been an arrow straightener. At least two others of this type and form are with the material of the Academia Sinica.

Plate LXXIV. Carved section of vessel. NB. 6323.

This bone is from the jaw of a whale, and is not unique for many such pieces are known. It was a segment or section of a round coopered ceremonial vessel. The inside is plain, and stained with red pigment down to a point where obviously the bottom of the vessel had been, which is just above the inverted U-loop seen at the bottom of the carved side.

The carved surface of the bone contains three definite zones, separated by plain horizontal lines. The top zone shows almost complete profiles of two dragons, and at the extreme top are two fore-legs and claws of animals which cannot be traced due to the loss of the adjoining material on each side.

The middle zone is a band of naturalistic cicadas. The bottom zone shows an inverted U design, which is a base-rim sectional design, as seen on base-rim fragments of Shang white pottery.

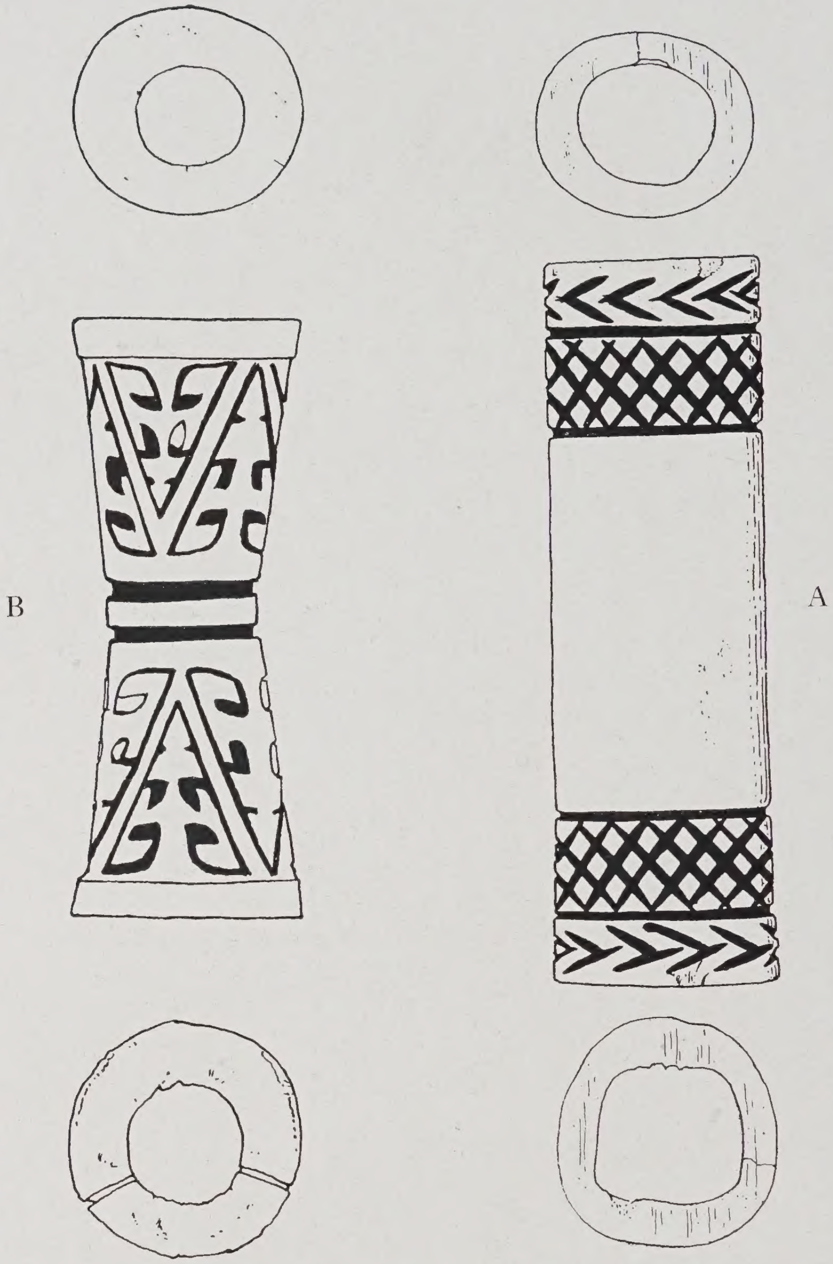
To the right is a fragmentary design of a profile animal of which the head is missing from the eye forward. To the left is a part of another profile animal whose head also is missing, but whose foreleg and compound horn are practically complete.

The background is meander-type, and a few *k'uei* symbols are evident.

Plate LXXV. Bone coopered vessel. NB. 4067.

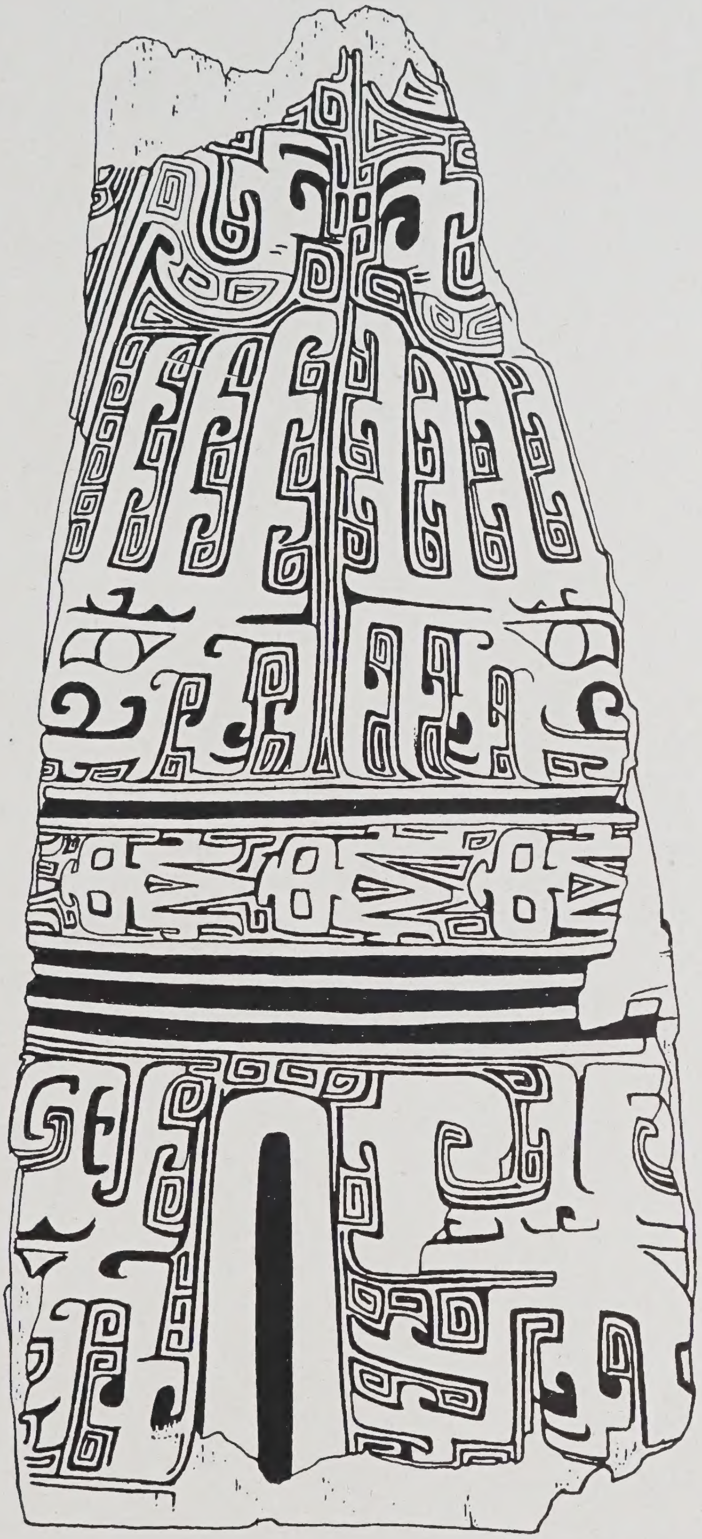
This cup or vessel is built up of bone sections, but the bottom is missing. The top rim is decorated with a band of stylized one-eyed *k'uei* dragons in volute and triangular arrangement. The round hole bored on the side of the vessel was doubtless intended to hold the attaching stem of a jade or bone animal mask, which would be in high relief (*cp. Illus. 10: D*).

PLATE LXXIII

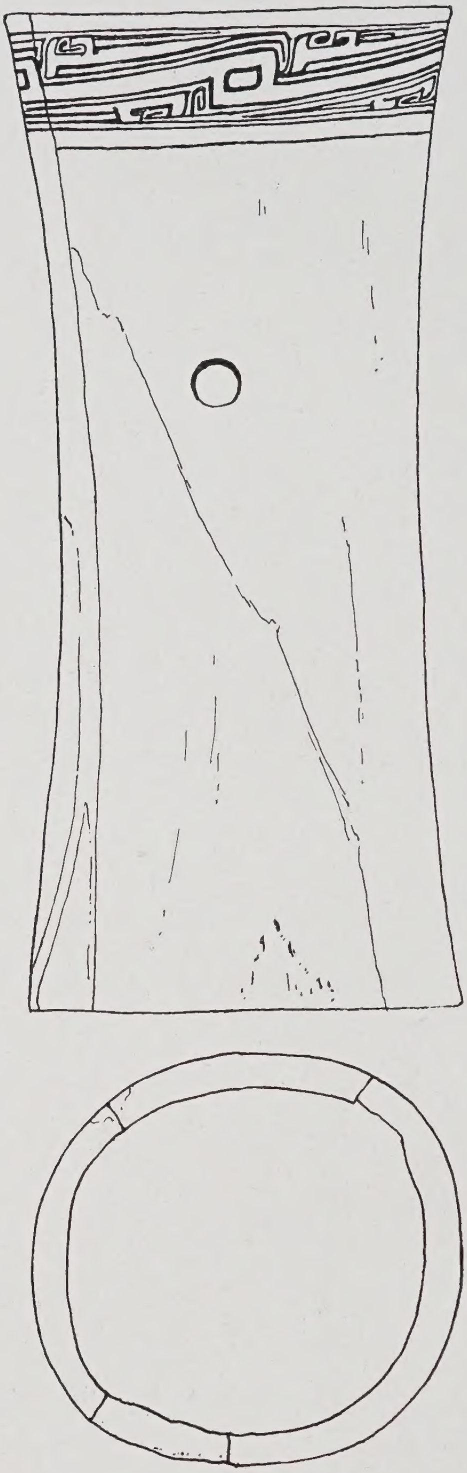


Bone Tube Objects.

A. NB. 2969 B. NB. 4221



Carved Section of Bone Vessel. NB. 6323.



Bone Coopered Vessel. NB. 4067.

Plate LXXVI. Carved ivory fragments.

A. Inlaid ivory fragment. NB. 6324. This is a fragment of the top rim of a carved ivory cup or bowl. The design is a section of a band of cicadas, which were deeply carved and inlaid with turquoise.

B. Inlaid ivory fragment. NB. 4263. This is part of a round block of ivory which had been carved in the round. The greater half of the block is missing, and only part of a frontal animal mask remains of the carving. Its use is unknown.

C. Dragon design ivory fragment. NB. 4262. This is an almost perfect *k'uei* dragon. It is in profile, and is definitely naturalistic in form. The animal is moving to the right, and its bottle-shaped horn is in high relief.

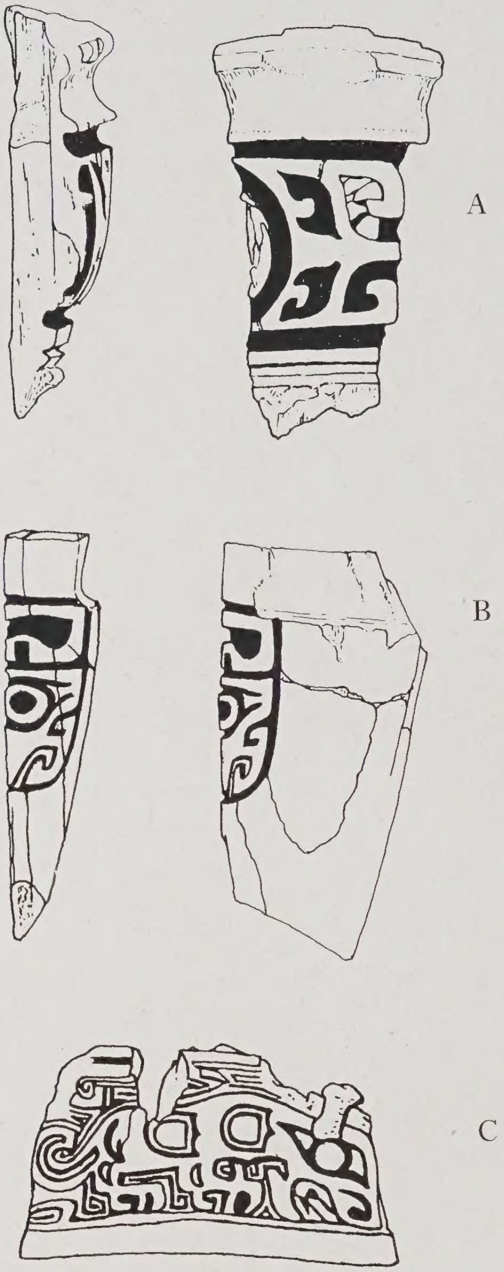
Plate LXXVII. Carved bone and ivory fragments.

A. Fragment of ivory cup. NB. 3037. This carved ivory cup had been inlaid, probably with turquoise, and the carving, such as remains of it, shows vigour and technical skill. The fragment includes a section of the top rim, on which is a small raised ear which has a round hole pierced in it, probably for a thong by which to carry the cup. There would be a similar ear on the opposite side, but that part of the vessel is missing. The animal design of the carving appears to be inverted, when directly faced, but not when looked at from above. This is a common Shang practice especially in regard to covers of vessels. This illustration should be inverted in order to recognize that the perforated ear becomes the nose of a feline frontal mask. To the right of this nose are parts of the eye and jaw of the animal. To the left there is nothing of the eye or jaw, but above where the eye should be is a part of the eyebrow, and above that is the feline ear or crest so common in the carved bone animal masks.

B. Fragment of carved bone plaque. NB. 4254. This fragment is carved only on one surface and one edge, the under side being plain. The design shows the eye and crest of an animal in profile, with a *k'uei* dragon symbol filling the empty place in front of the head. The upper right section had been broken off and the restoration has placed it tentatively in its present position, which may not be correct. The deep incisions suggest a sparse inlay of turquoise.

C. Fragment of charred ivory. NB. 1737. This has been completely charred by fire. The form suggests that it might have been part of a rectangular vessel or small casket. The design is only on the one surface; the under side being plain and smooth. The design is not clear, but on the left are parts of snout, eye, and crest of a *k'uei* dragon in profile; the other design may be parts of a larger animal.

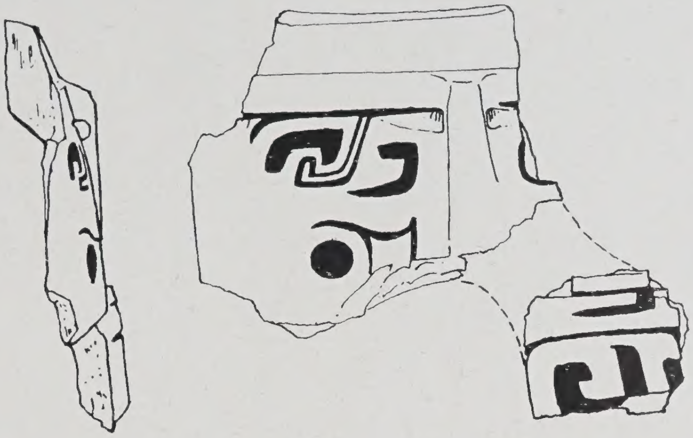
PLATE LXXVI



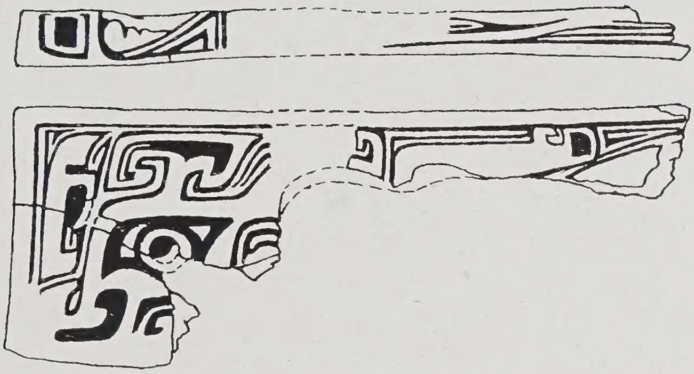
Carved Ivory Fragments.

A. NB. 6324 B. NB. 4263 C. NB. 4262

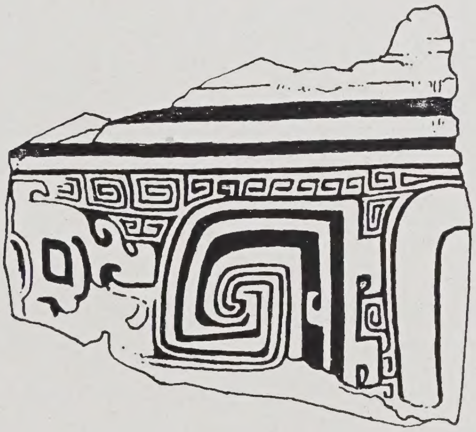
PLATE LXXVII



A



B



C

Carved Bone and Ivory Fragments.

A. NB. 3037 B. NB. 4254 C. NB. 1737

Plate LXXVIII. Carved bone and ivory fragments.

A. 1. Small fragment of ivory. NB. 4252. This appears to have been part of a carved ivory vessel.

2. Carved fragment of ivory vessel. NB. 4251. The top end shows the rounded rim.

3. Carved fragment of ivory. NB. 4250. By the character of the ivory the above fragments would appear to have come from the same vessel.

B. 1. Small fragment of carved ivory. NB. 4247.

2. Carved ivory tube. NB. 6325. This material is very hard and glassy, and may be a semi-fossilized ivory, or a kind of hard dessicated jade. It is probably a bead, for it is pierced through the centre by a hole suitable for stringing.

3. Carved ivory fragment. NB. 4248. This is a fragment of what may have been a coopered vessel, with part of a cut-out opening where a mask or handle was attached. The design is animal as seen in the profile eye.

C. 1. Fragment of charred ivory. NB. 6326.

2. Small fragment of ivory. NB. 4258.

3. Small fragment of ivory. NB. 6327.

Plate LXXIX. Carved bone and ivory objects.

A. Bone pendant. NB. 6328. Probably a necklace pendant or bead. The design is an animal mask, and the object has been pierced for stringing.

B. Fragment of stag antler. NB. 4257. This object is carved in the round with parts of two animal heads, one of which has a prominent bottle-shaped horn.

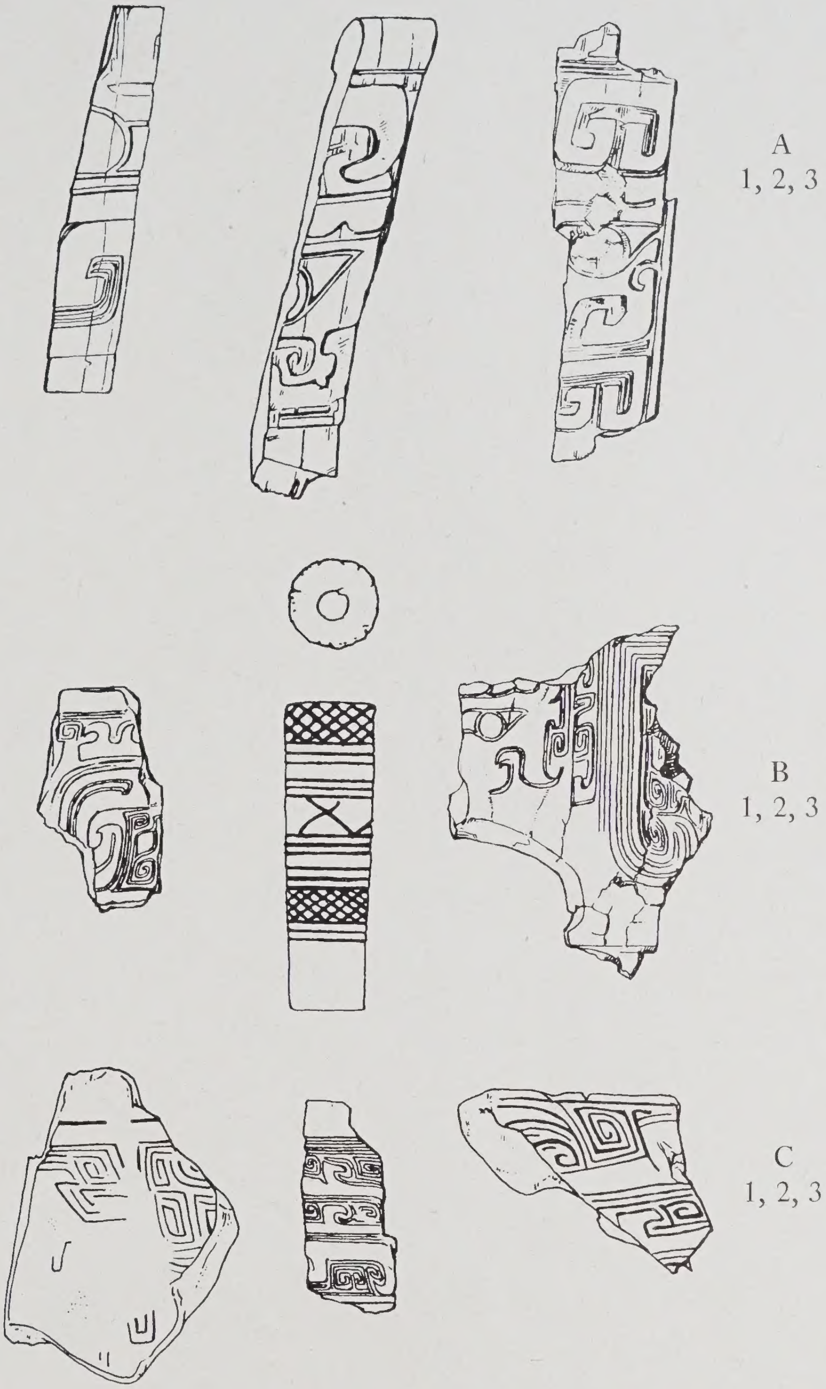
C. Carved fragment of ivory. NB. 4259. This and the following small bone plaque were found among a quantity of unwashed oracle bone fragments from Anyang. The object seems to have been a part of a rectangular staff tip which had been carved as a square knob.

D. Thin bone plaque. NB. 4256. This was washed out from clay which held fragments of inscribed oracle bones. It is carved on one surface only, and the design is that of a pair of *k'uei* dragons in apposition (*cp. Illus. 3, A: 10*).

Plate LXXX. Carved bone fragment. NB. 4115.

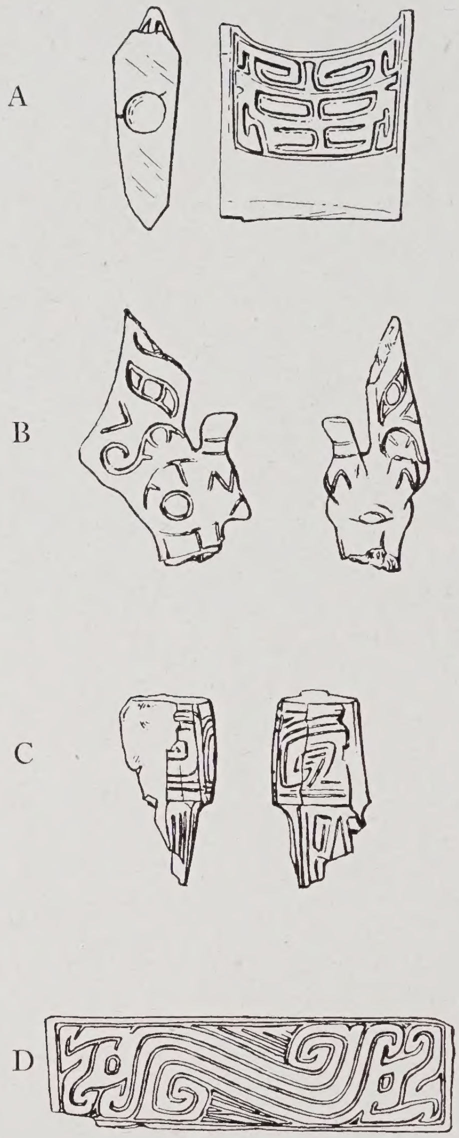
The bone is probably a piece of the leg-bone of an ox. The style of its carving is unusual, and similar in character to carved designs found on a certain dark grey pottery from the Anyang area. The eye in the centre was probably inlaid with shell or jade or turquoise. This fragment is said to have come from the Hsün Hsien excavations, and might be classed in the period of the Shang-Chou overlap.

PLATE LXXVIII


A
1, 2, 3
B
1, 2, 3
C
1, 2, 3

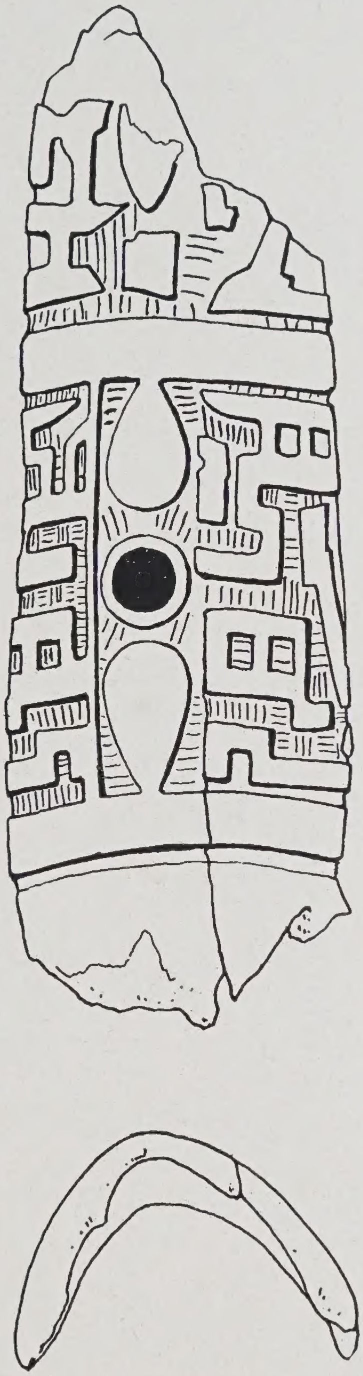
Carved Bone and Ivory Fragments.

A. 1: NB. 4252 2: NB. 4251 3: NB. 4250
B. 1: NB. 4247 2: NB. 6325 3: NB. 4248
C. 1: NB. 6326 2: NB. 4258 3: NB. 6327



Carved Bone and Ivory Objects.
A. Bone Pendant. NB. 6328. B. Antler Fragment. NB. 4257
C. Ivory Fragment. NB. 4259. D. Thin bone plaque. NB. 4256

PLATE LXXX



Carved Bone Fragment. NB. 4115.

III. BONE IMPLEMENTS

Plates LXXXI-LXXXIV

It is generally agreed that the Shang people made their bronzes not only by using clay moulds, but by use of the lost wax process, in which case they would use small spatulate implements, for the design work on wax, as well as on clay for the moulds. They would also use the same sort of implements for the incised designs on the white pottery vessels. Jade implements for this purpose are quite common. The following bone implements must also be considered as tools for this purpose, and many of them show signs of heavy wear as a result of this use.

Plate LXXXI. Small bone implements.

A. Bone cicada. NB. 4280. This has a well-worn spatulate tail.

B. Bone frog. NB. 4276. This also has a spatulate tail that has been much used.

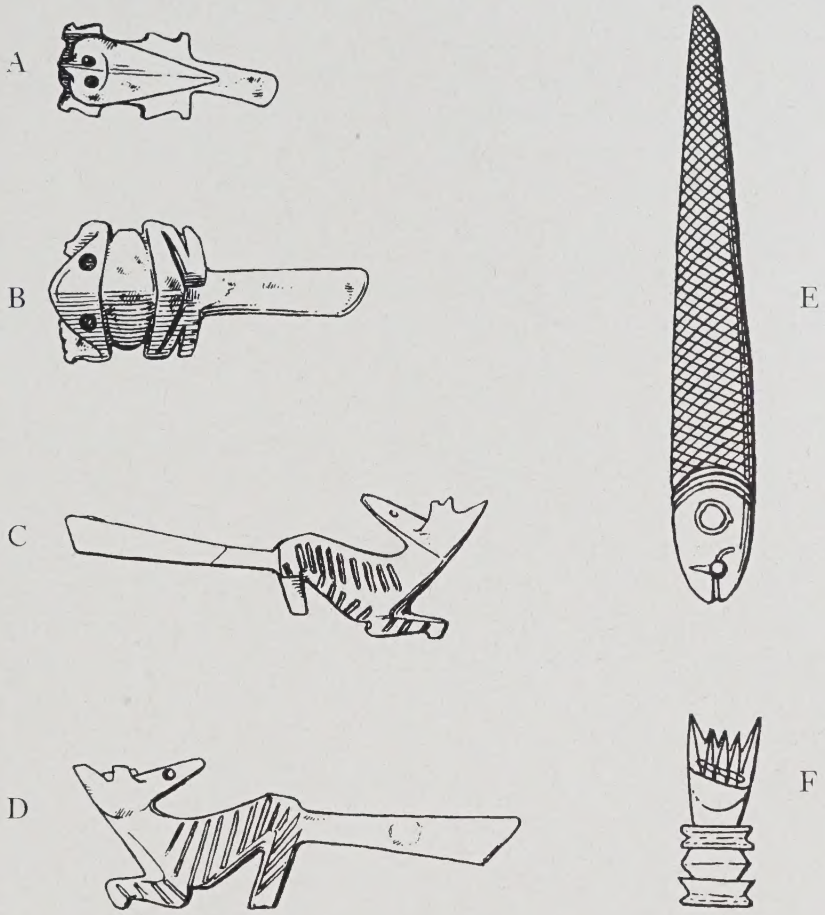
C. Bone fox-like animal. NB. 4279.

D. Bone fox-like animal. NB. 4278. These two animals have reverted heads, and are naturalistic in form, with long spatulate tails.

E. Bone fish. NB. 4307. This is carved in the round, with cross-hatching surface. The tail is pointed, and worn down with use. The mouth is perforated to hold a thong.

F. Bone hand. NB. 6329. This appears to have lost its stem or spatulate end (*cp. Pl.* LXXXII: *A*).

PLATE LXXXI



Small Bone Implements.

A. Cicada. NB. 4280. B. Frog. NB. 4276.
C. Fox. NB. 4279. D. Fox. NB. 4278.
E. Fish. NB. 4307. F. Hand.NB. 6329.

Plate LXXXII. Small bone implements.

A. Carved bone implement. NB. 3046. This object has open-work carving, and linear surface design. It has a spatulate knife at one end, and an open hand at the other. Two small holes are bored at the base of the knife, which may possibly be for a suspending thong.

B. Bird leg-bone implement. NB. 4270. This leg-bone has been carved with corrugations for facility in holding; and the end is spatulate. These bevelled spatulate ends are similar in size and shape to a style of metal knife used in China in modern times.

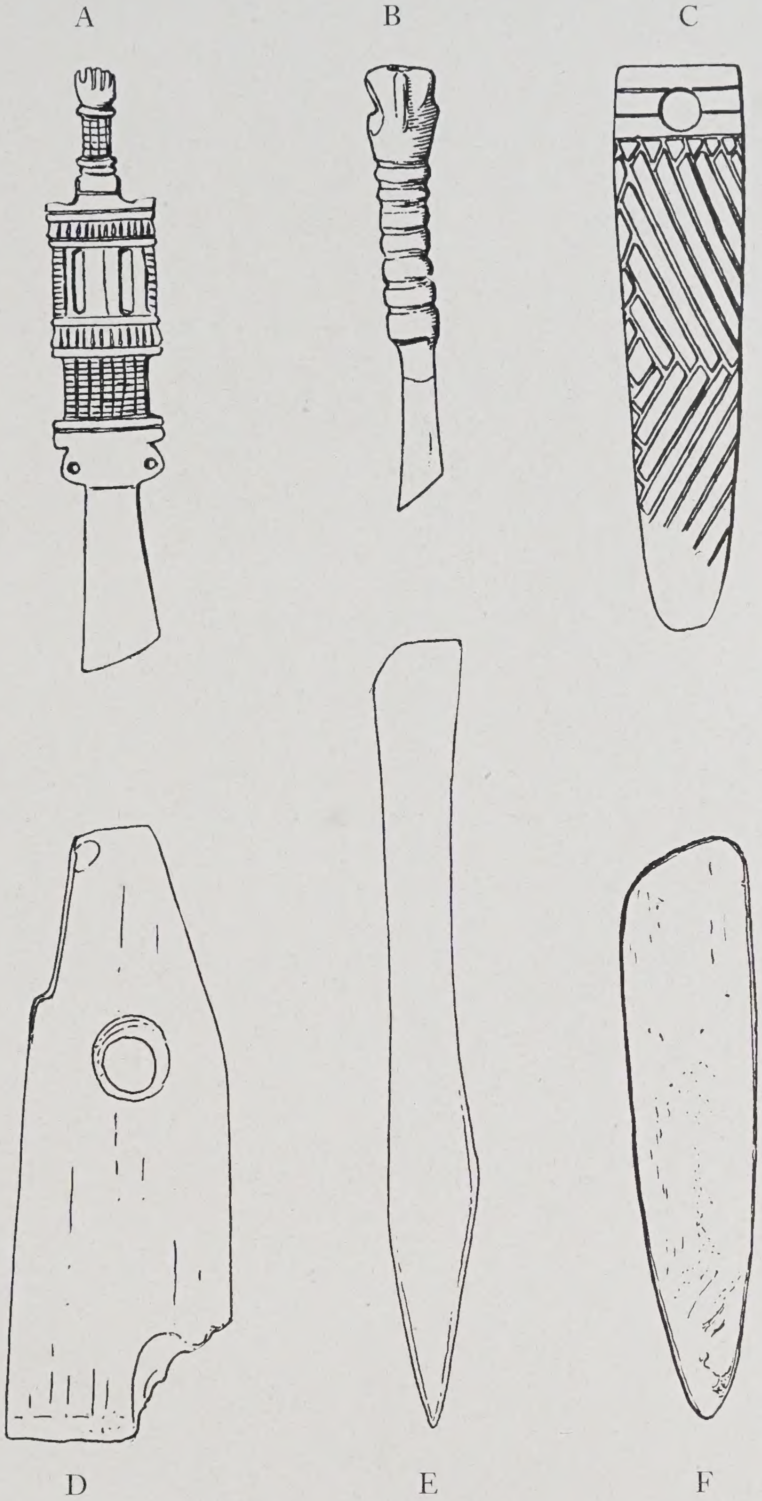
C. Bone fragment. NB. 4271. This is a section of a bone tube characteristic to Shang. The tube had doubtless broken and this section was ground down at one end and put into commission as a smoothing or incising implement. The other end had been bored to take a suspending thong. The break in the decoration by the zigzag line, shows where the original centre of the tube had been, for both ends of the original tube would have had the same decoration.

D. Plain bone fragment. NB. 4281. This also was a broken fragment of a bone object, roughly fashioned to be a smoothing or moulding implement. A perforation was bored for suspending.

E. Plain bone point. NB. 4277. A splinter of a bone ceremonial spatula, utilized as an implement.

F. Plain bone point. NB. 4275. Probably a fragment of a spatula. This has been very much used, as all the edges and corners are worn and rounded.

PLATE LXXXII



Small Bone Implements.

A. NB. 3046 B. NB. 4270 C. NB. 4271
D. NB. 4281 E. NB. 4277 F. NB. 4275

Plate LXXXIII. Bone needle, awls, and chisel.

A. Bone needle. NB. 4273. This has a hole pierced at the thick end.

B. Bone awl. NB. 2943.

C. Bone awl. NB. 2944.

D. Bone awl. NB. 2945.

E. Ivory chisel. NB. 2103. The ivory of this chisel is exceedingly hard, and by its striations might well have been from narwhal tusk. The sharp tip is slightly broken, and the butt end has also been broken off an unknown length. Its surface is smooth and highly polished, and it has been covered with red pigment. An unbroken specimen of similar material is with the Academia Sinica (*Catalogue of Chinese Government Exhibition in London; Nanking, 1936, Vol. IV, p. 131; number AS 0.038*).

Scale = A to D natural size;
E one-half size, front and side views.

Plate LXXXIV. Bone implements.

A. Plain evenly shaped rod. NB. 6330. Many of these rods have been found, sometimes associated with arrow-heads, but their use is unknown. Many show stains of bronze corrosion. They might possibly be chopsticks.

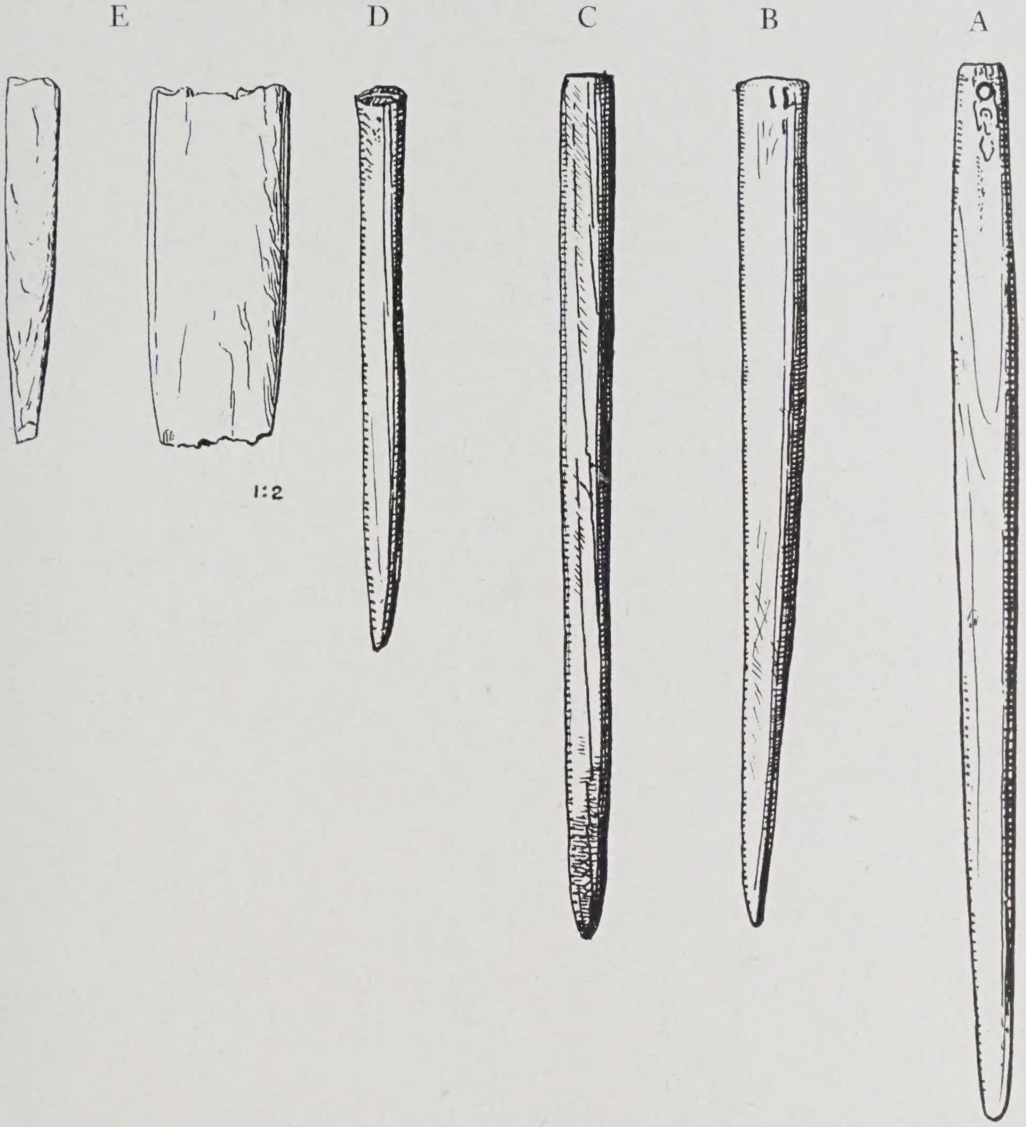
B. Bone rod. NB. 890. Evenly shaped with dome top. Use unknown.

C. Bone spinning whorl. NB. 4290.

D. Bone spinning whorl. NB. 4285. Scale: one-half.

E. Conical ivory tip from a whorl. NB. 4284.

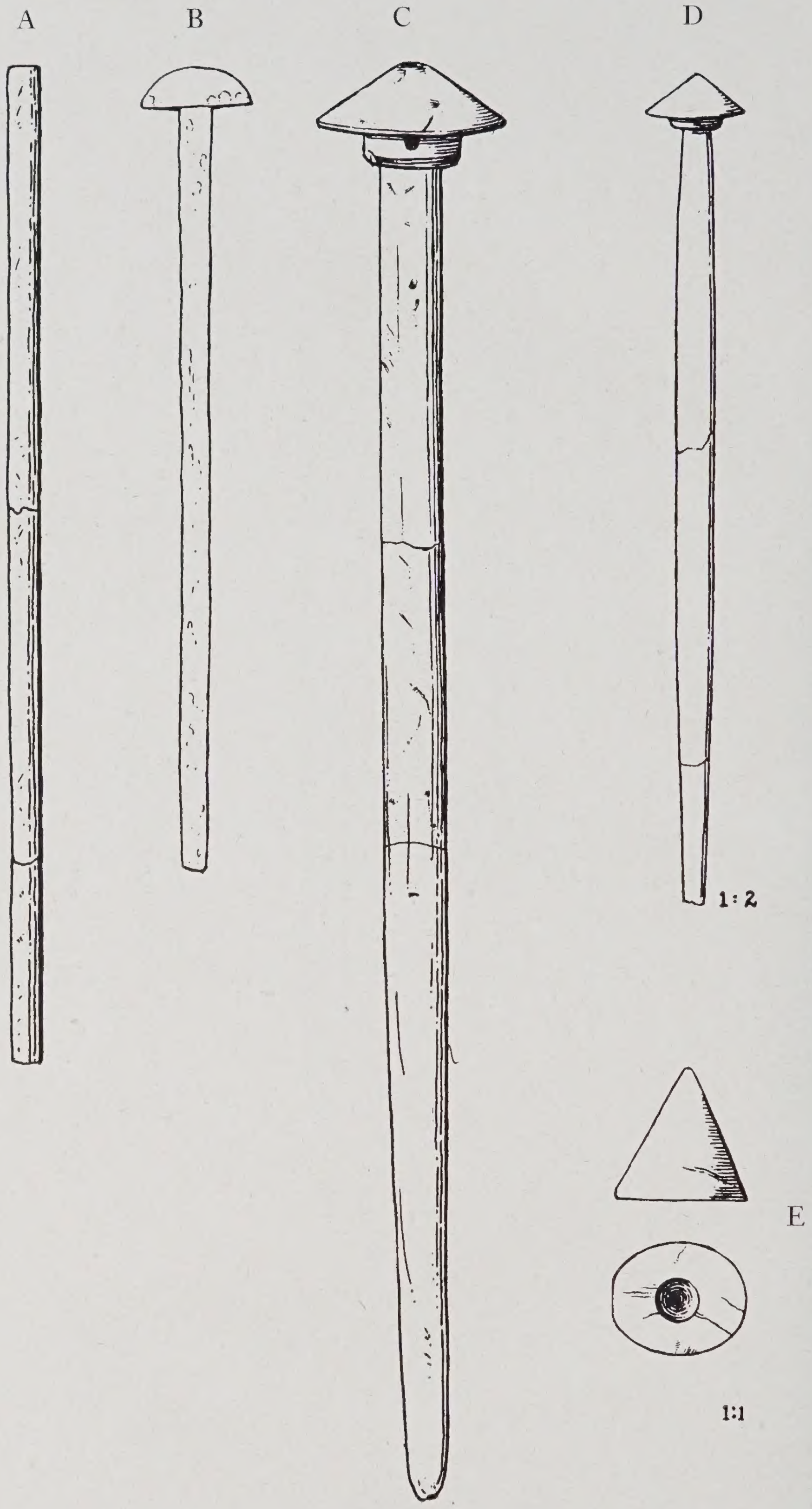
PLATE LXXXIII



Bone Needle, Awls, and Chisel.

A. Needle. NB. 4273. B. Awl. NB. 2943. C. Awl. NB. 2944.
D. Awl. NB. 2945. E. Ivory Chisel. NB. 2103.

PLATE LXXXIV



Bone Implements.

A. NB. 6330 B. NB. 890 C. NB. 4290
D. NB. 4285 E. NB. 4284

IV. BONE HAIRPINS

Plates LXXXV-XCI

A remarkably large number of bone hairpins have come from the Anyang excavations, but so far there are no bronze hairpins. They average about five inches in length, but some have been worn down to stub ends, and an examination of these ends leads to the assumption that the pins were put to very general uses besides that of hairpins. In one of the early Chinese dictionaries it is mentioned in connection with the name for hairpin *chi*, that in ancient times the top of the hairpin was carved in the form of a cock. No authority was quoted for this, but the finds at Anyang seem to corroborate the statement, for bird-form decorations on the tops of the hairpins are quite common (*cp. Plates* LXXXIX-XCI).

Plate LXXXV. Plain bone hairpins.

A. NB. 2942. Front and side aspects.
B. NB. 4286. Front and side aspects.

Plate LXXXVI. Plain bone hairpins.

A. NB. 4289. Front and side. With conical top.
B. NB. 4287. Front and side.

Plate LXXXVII. Carved bone hairpins. With flat tops, shaped like an inverted key-stone.

A. NB. 2940 B. NB. 2939 C. NB. 4291

Plate LXXXVIII. Carved bone hairpins and fragments.

These are all flat, and both surfaces of each carry cross-hatching patterns. The first three are stylizations of an unknown object, which may possibly be a human form (*cp. Pl.* LXXXIX *A*). The following three are probably bird forms. Both A and B have seen much use so that the points have receded very considerably from the original length.

A. NB. 4294 B. NB. 4292 C. NB. 4293 D. NB. 4096
E. NB. 2937 F. NB. 4274

Plate LXXXIX. Carved bone hairpins.

These also are flat. The first, A, appears to be of human form; while B and C are bird forms; and D is triangular.

A. NB. 4095 B. NB. 3052 C. NB. 2839 D. NB. 2941

Plate XC. Carved bone hairpins and fragments.

These are flat, and of bird form similar to ducks; as are also B and C of the following plate.

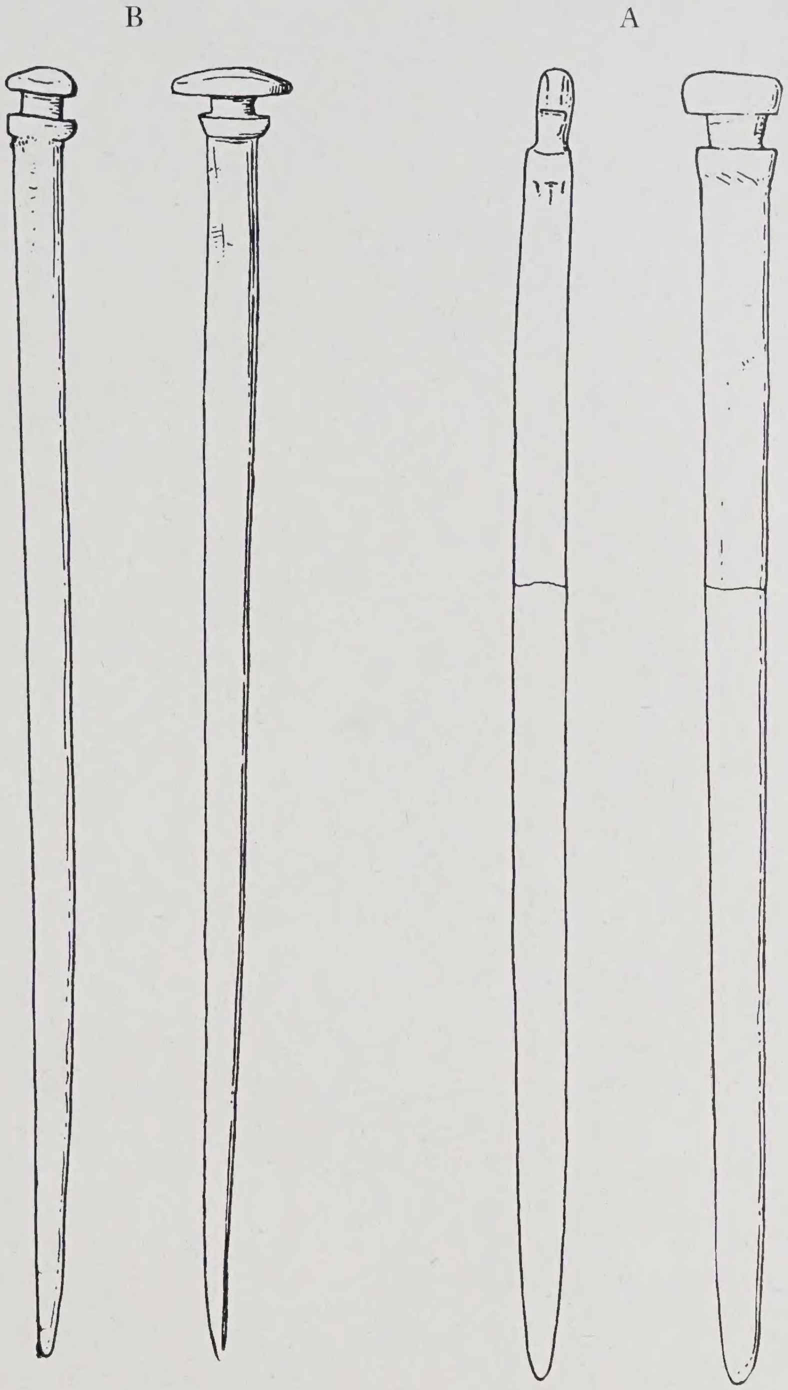
A. NB. 4300 B. NB. 4301 C. NB. 4397 D. NB. 4298
E. NB. 4304 F. NB. 4302 G. NB. 4303

Plate XCI. Carved bone hairpins.

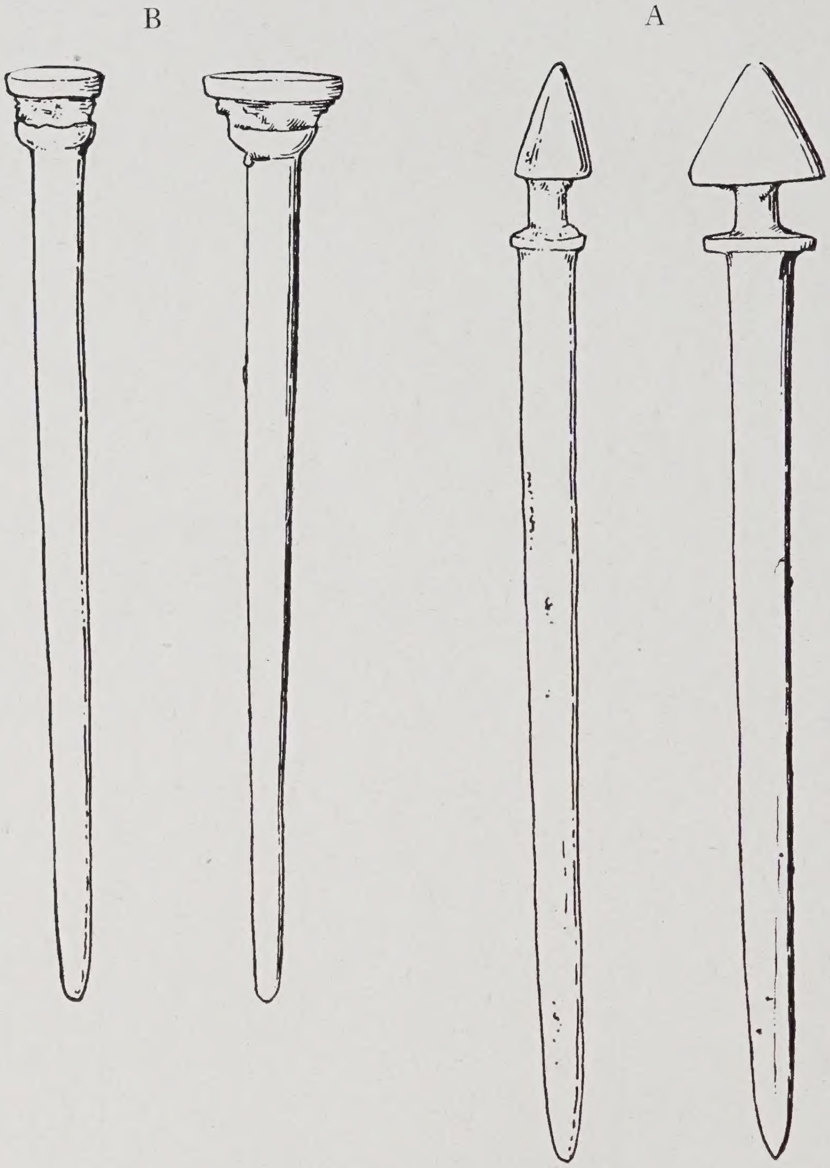
A. NB. 4305. This flat-topped hairpin is in the form of a bird, with a very large eye, and a large and striking crest.

B. NB. 2938 C. NB. 4299

PLATE LXXXV



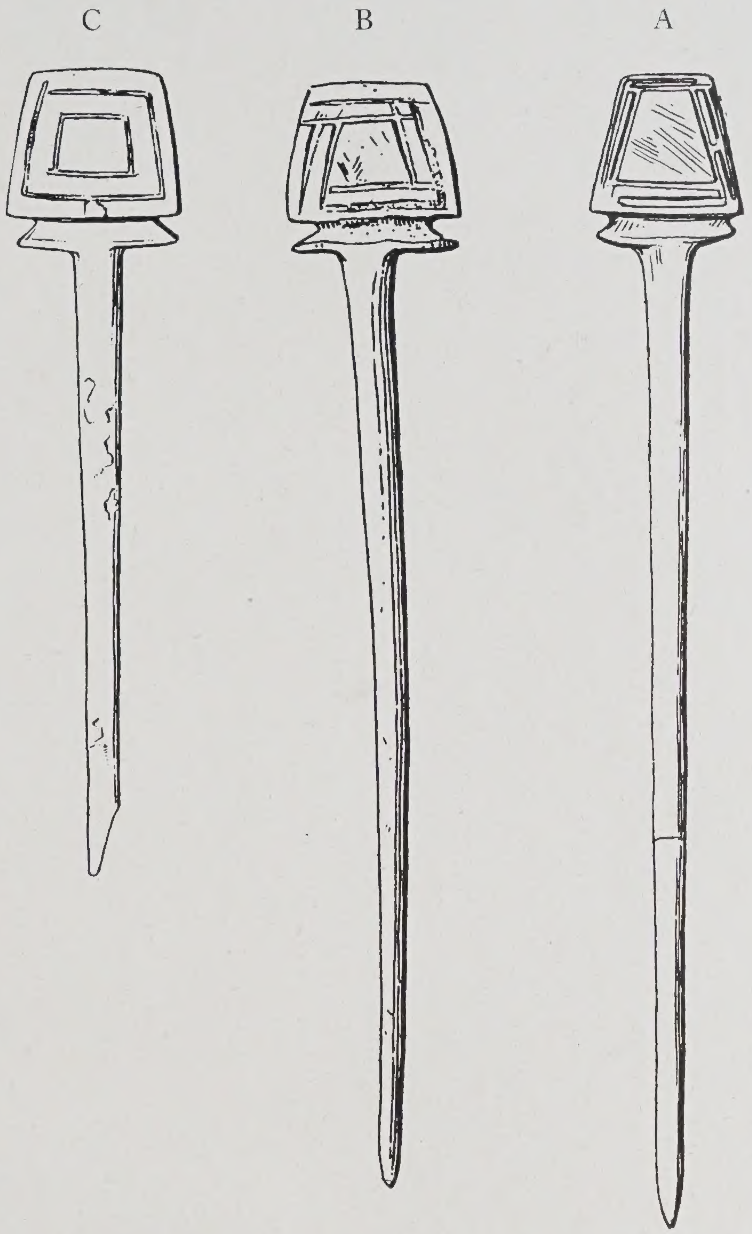
Plain Bone Hairpins.
A. NB. 2942 B. NB. 4286



Plain Bone Hairpins.

A. NB. 4289 B. NB. 4287

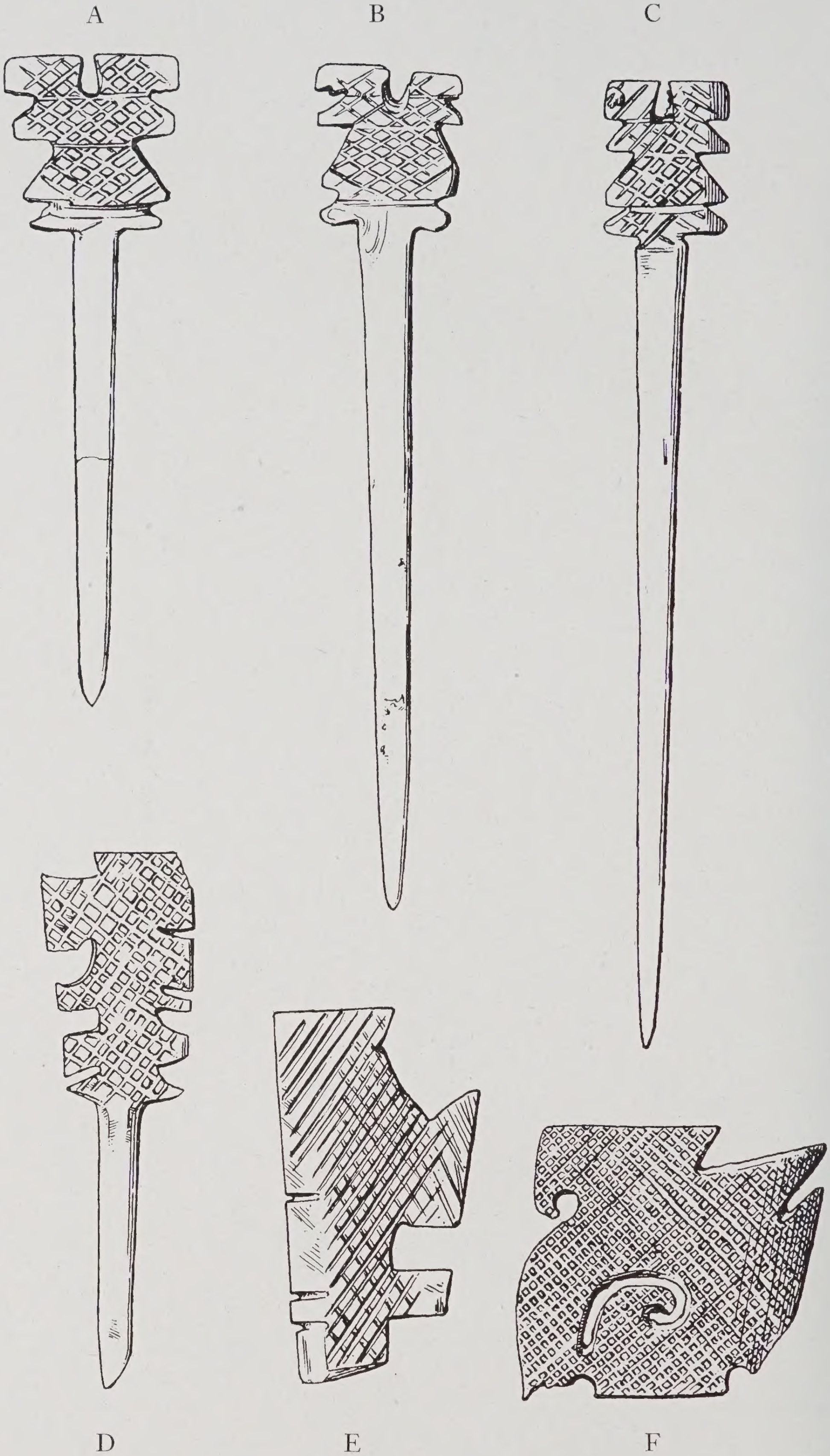
PLATE LXXXVII



Carved Bone Hairpins.

A. NB. 2940 B. NB. 2939 C. NB. 4291

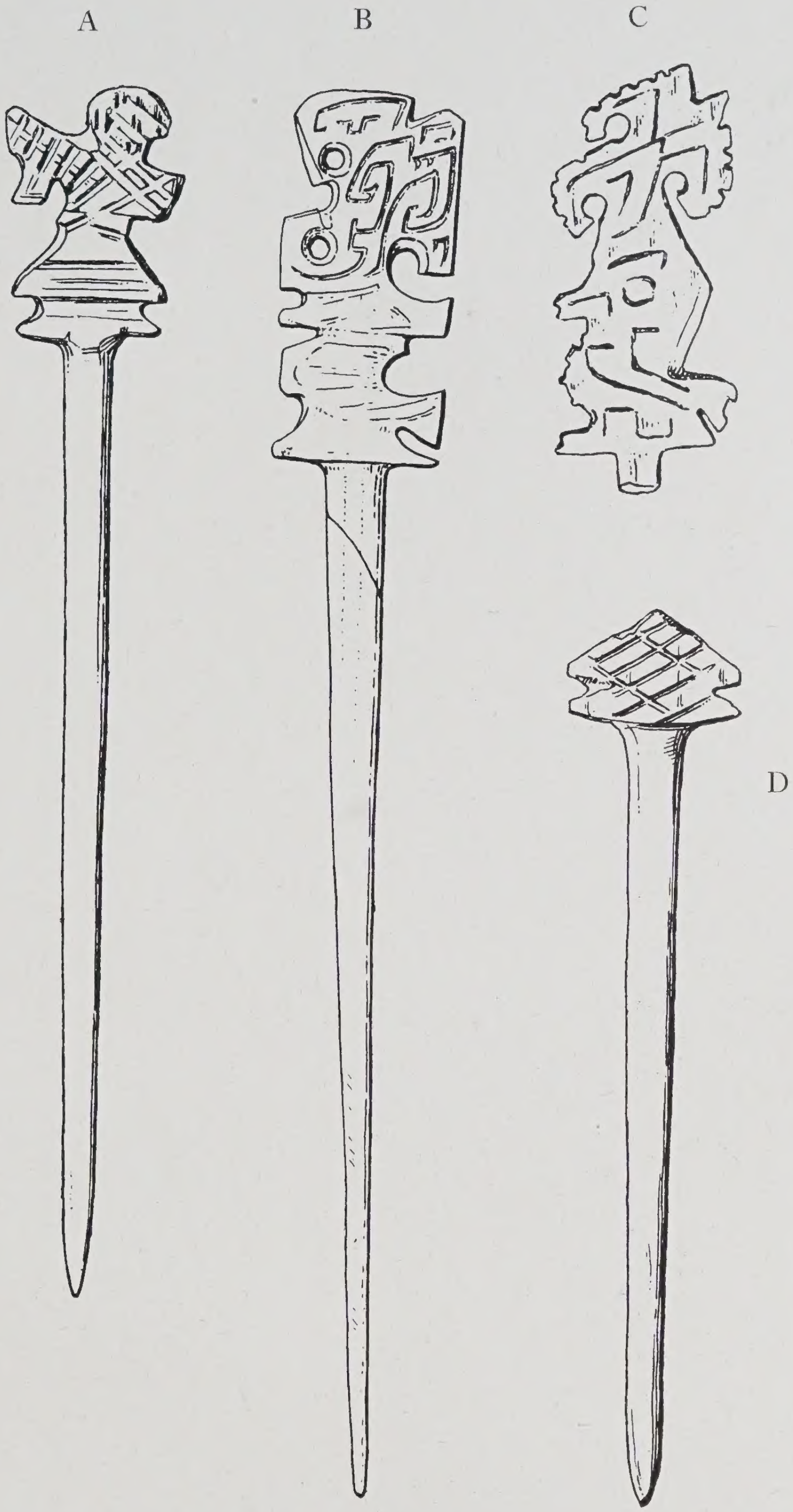
PLATE LXXXVIII



Carved Bone Hairpins and Fragments.

A. NB. 4294 B. NB. 4292 C. NB. 4293
D. NB. 4296 E. NB. 2937 F. NB. 4274

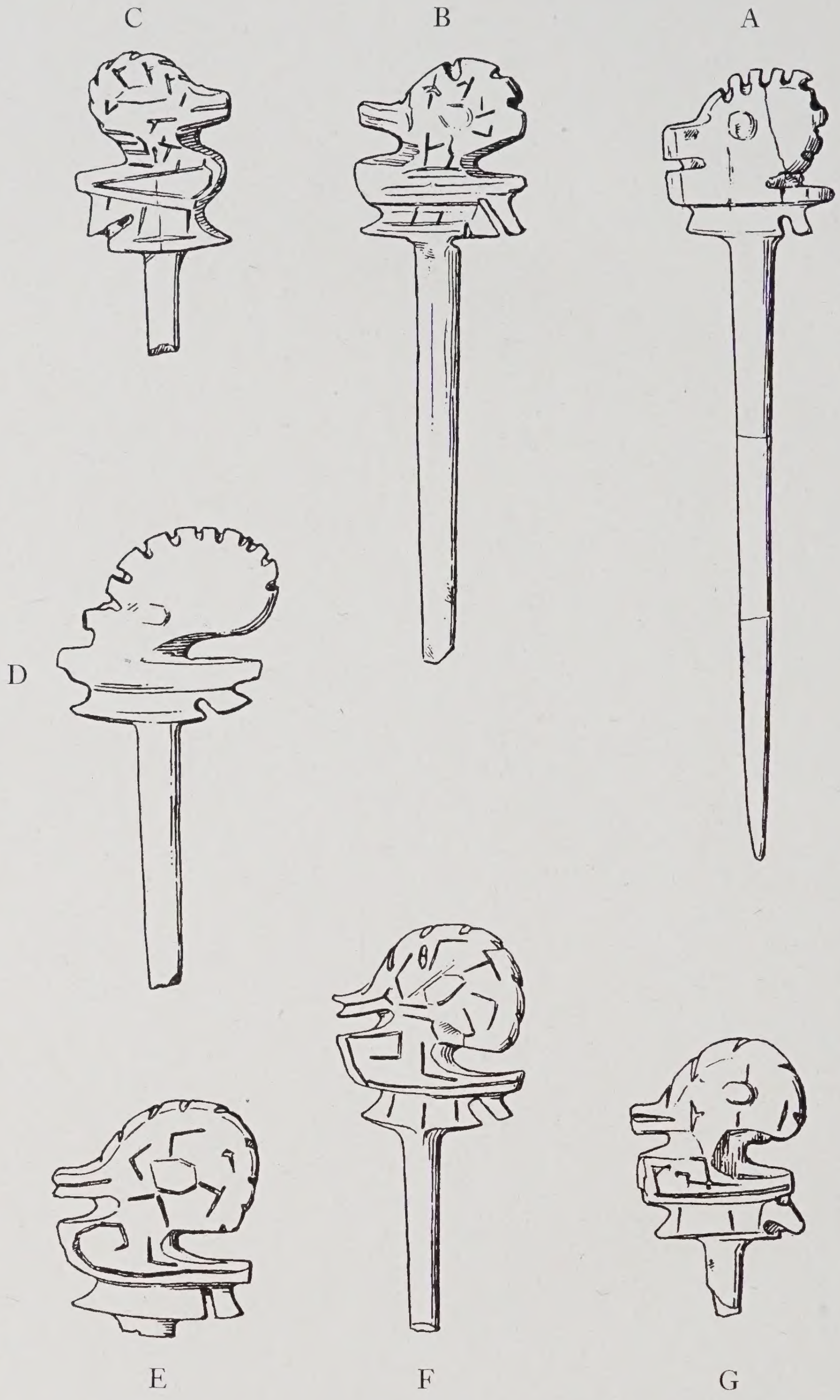
PLATE LXXXIX



Carved Bone Hairpins.

A. NB. 4295 B. NB. 3052 C. NB. 2839 D. NB. 2941

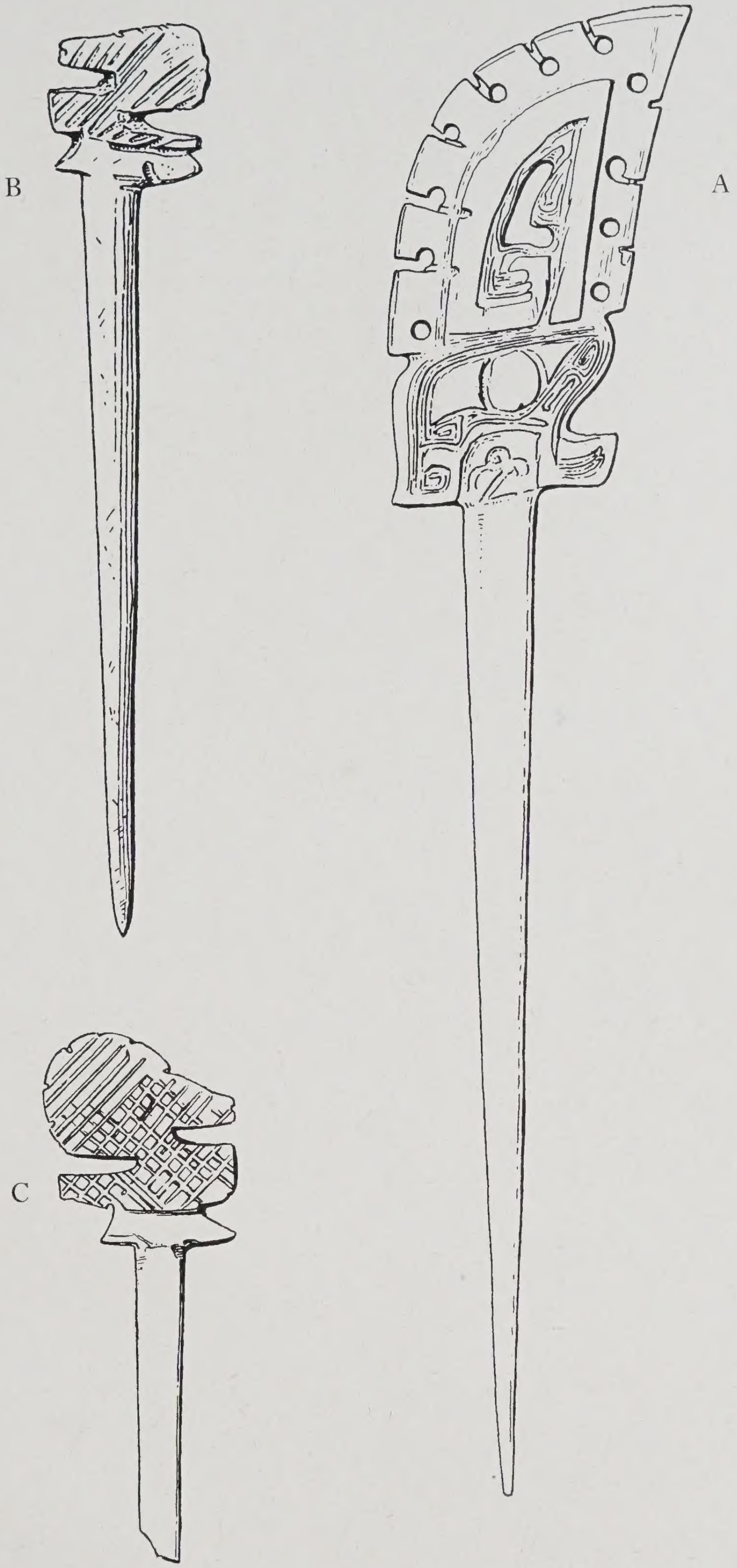
PLATE XC



Carved Bone Hairpins and Fragments.

A. Hairpin. NB. 4300. B. Hairpin. NB. 4301. C. Fragment. NB. 4397
D. Fragment. NB. 4298. E. Fragment. NB. 4304. F. Fragment. NB. 4302
G. Fragment. NB. 4303.

PLATE XCI



Carved Bone Hairpins.

A. NB. 4305   B. NB. 2938   C. NB. 4299

V. BONE WEAPONS

Plates XCII-XCVIII

Weapons in common use in Shang were dagger-axes, battle axes, spears, socketed celts, knives, and bows and arrows. Pictographs of these are found in the inscriptions of the oracle bones and of the bronzes of that period. Naturally most of the weapons found in the excavations are of bronze. Bone weapons are almost entirely limited to arrowheads and parts associated with bows. Bronze and stone arrowheads, which so far seem to be only of the double-edged, barbed base variety, are not as plentiful as those of bone. Bone arrowheads exist in many forms.

Plate XCII. Carved bone and tusk objects.

A. Inlaid bow-tip. Side and front aspects. NB. 2855. Some of the turquoise inlay still remains in the deep incisions. The design on the object is that of a feline animal mask, with an extensive and highly stylized crest above it. A similar object, somewhat smaller and more crudely formed, without inlay, is in the material gathered at Anyang by the Academia Sinica.

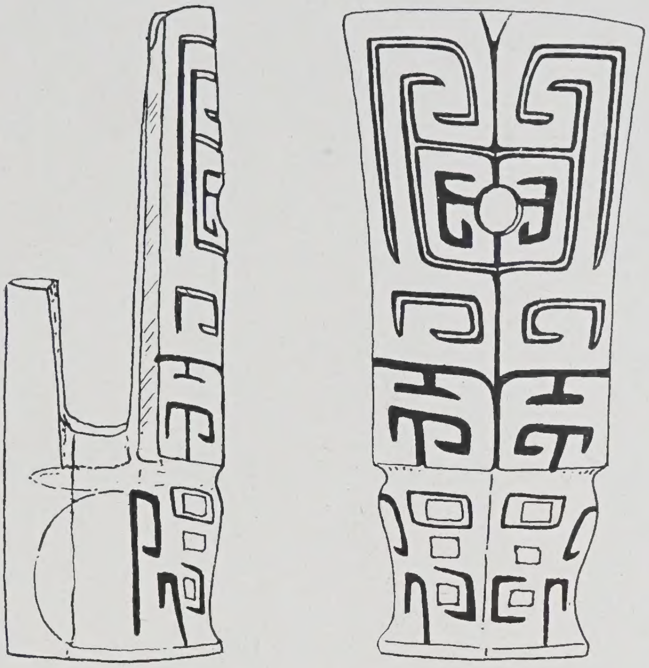
B. Tusk armour plates. (1) NB. 4268. (2) NB. 3397.

These plates are fairly common, and are oftentimes stained green with the corrosion of associated bronze.

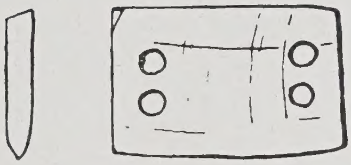
C. Bone fish-hooks. (1) NB. 3316. (2) NB. 4272.

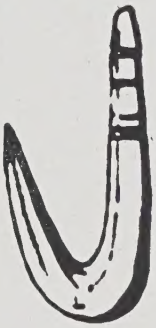
PLATE XCII

A



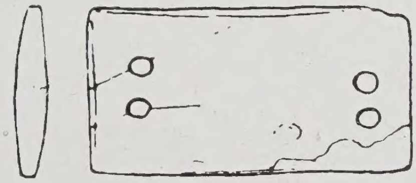
B 1

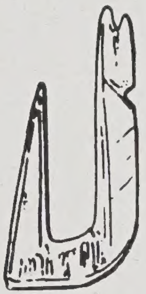




C 1

B 2

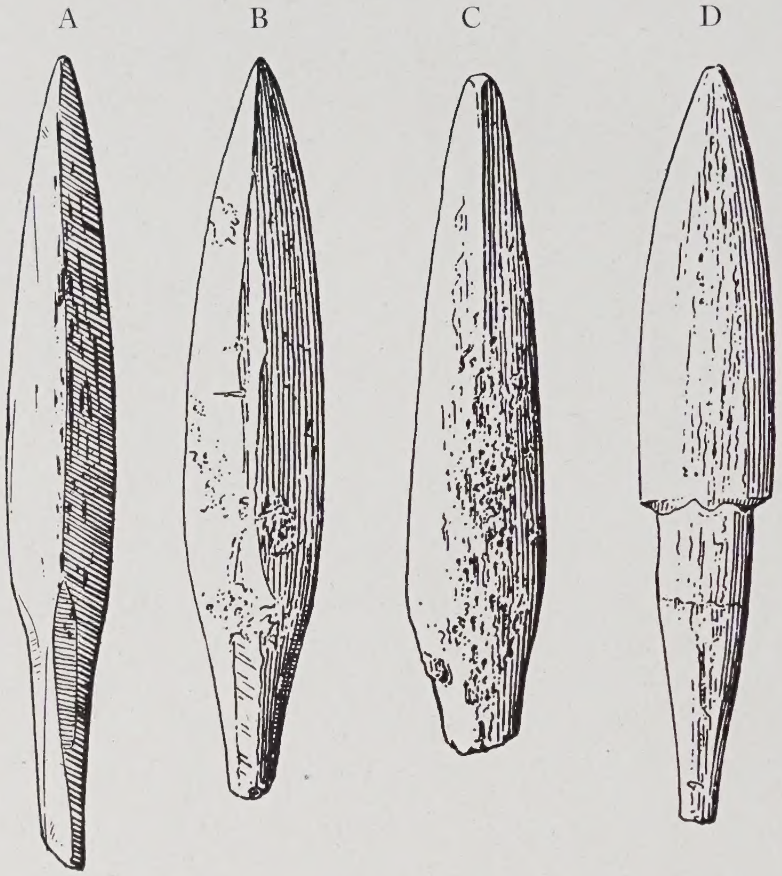




C 2

Carved Bone and Tusk Objects.

A. Inlaid Bow-tip, side and front views. NB. 2855.
B. Tusk Armour Plates. 1: NB. 4268 2: NB. 3397.
C. Bone Fishhooks. 1: NB. 3316 2: NB. 4272.

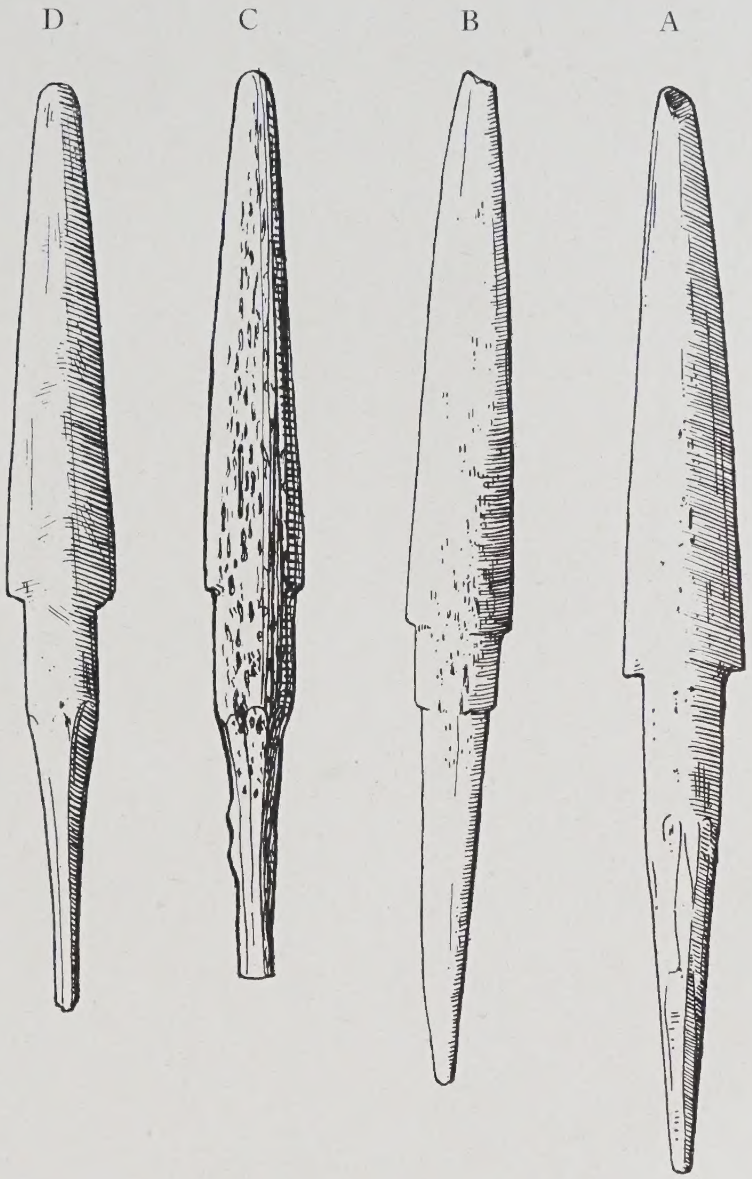


Bone Arrowheads for Hunting.

A. NB. 3045 B. NB. 3042 C. NB. 2440 D. NB. 2928

Plate xciii. Bone arrowheads for hunting.

A. NB. 3045. Double-edged. Sharp mid-ridge on one side.
B. NB. 3042. Double-edged. Mid-ridge on one side.
C. NB. 2440. Double-edged. Stem broken off.
D. NB. 2928. Double-edged. No mid-ridge. Base is marked off from stem.



Bone Arrowheads for Archery.

A. NB. 2925 B. NB. 3043 C. NB. 2926 D. NB. 3044

Plate XCIV. Bone arrowheads for archery.

Archery was one of the required cultural pursuits of a scholar in the time of Confucius, but it was a common practice a thousand years earlier in Shang.

A. NB. 2925. Double-edged, with mid-ridge on both sides. It has a slightly barbed base, and the stem shows string markings.

B. NB. 3043. C. NB. 2926. D. NB. 3044. These are all similar to A.

Plate XCV. Various forms of bone arrowheads.

A. NB. 2439. Double-edged. No mid-ridge, and no marked-off base.
B. NB. 2930. Small double-edged point.
C. NB. 2929. Unfinished or crudely formed point.
D. NB. 2927. Double-edged, with mid-ridge on one side.
E. NB. 2946. Round, slender point.
F. NB. 2932. Round, with three-sided tip.
G. NB. 2933. Round, with three-sided tip, and very short stem.
H. NB. 3106. Round, three-sided tip, line incisions on sides and rings at the base, with a very short stem. This arrowhead is of ivory.

Plate XCVI. Bone arrowheads of various forms.

A. NB. 3939. Double-edged, with mid-ridge on both sides. Base is in line with the stem, of which the point is broken.

B. NB. 6333. Double-edged, with pronounced mid-ridge on both sides. Stem broken off.

C. NB. 6332. Crudely formed, double-edged, with slight mid-ridge on both sides.

D. NB. 6331. Crudely formed, double-edged, with mid-ridge on both sides. Very slender, and the head is in line with the stem.

E. NB. 6336. Double-edged, with mid-ridge on both sides. The tip of stem is missing. The following three arrowheads are similar to this one.

F. NB. 6335. G. NB. 3946. H. NB. 6334.

Plate XCVII. Bone arrowheads with barbed base.

A. NB. 6337. Double-edged with barbed base. Extra-developed mid-ridge. Stem broken off.

B. NB. 2936. Double-edged with barbed base. Slight mid-ridge.

C. NB. 6338. Double-edged with barbed base. Both edges as well as the stem, are broken off. The mid-ridge is extra-developed.

D. NB. 6339. Double-edged with barbed base, of which one edge is missing.

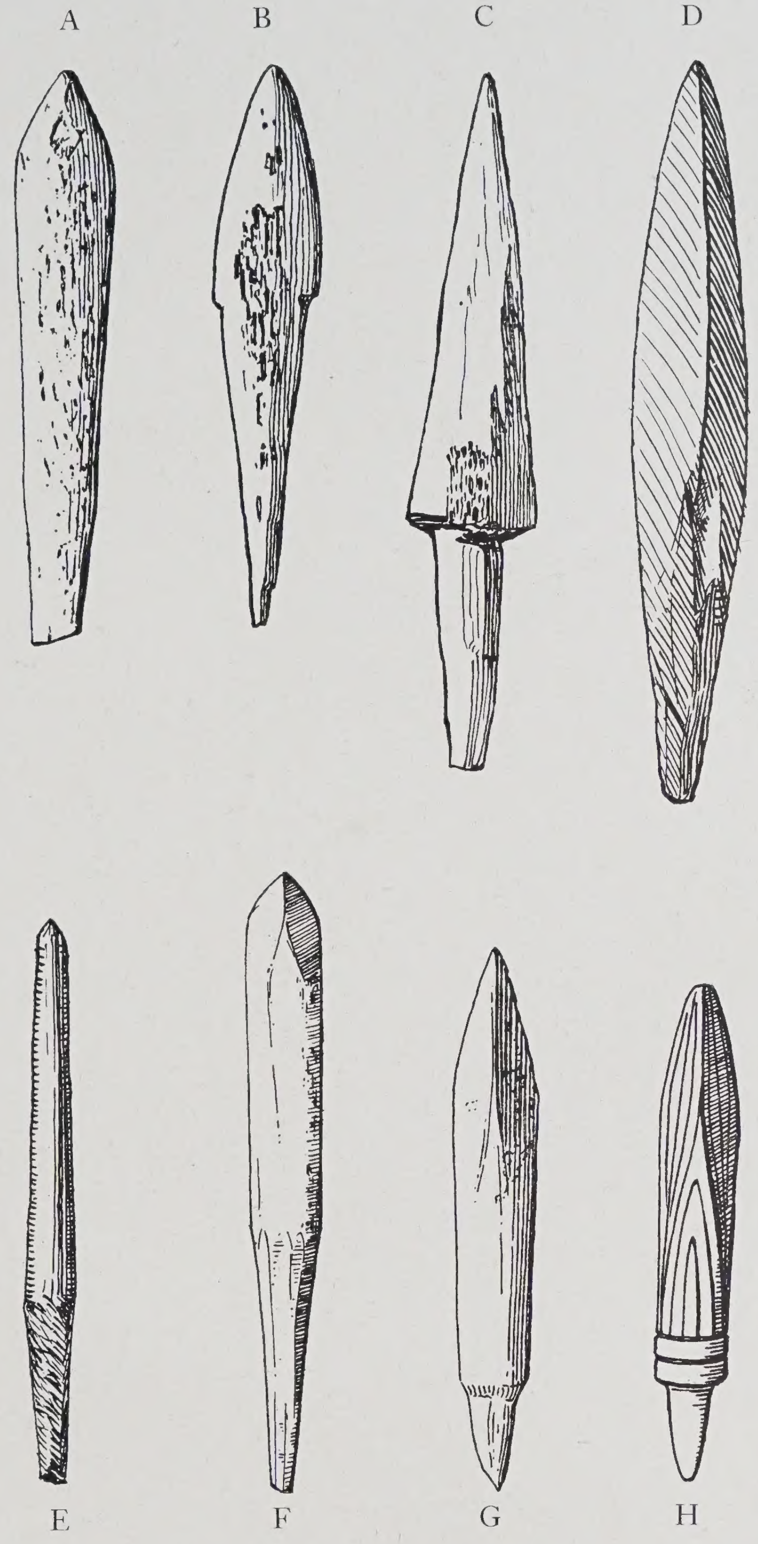
E. NB. 6340. Double-edged with barbed base. One edge missing, and part of the stem. Pronounced mid-ridge.

F. NB. 6341. Double-edged with barbed base. Slight mid-ridge, and stem broken off.

G. NB. 6342. Double-edged with barbed base. Slight mid-ridge and short stem.

H. NB. 6343. Double-edged with barbed base, and long stem.

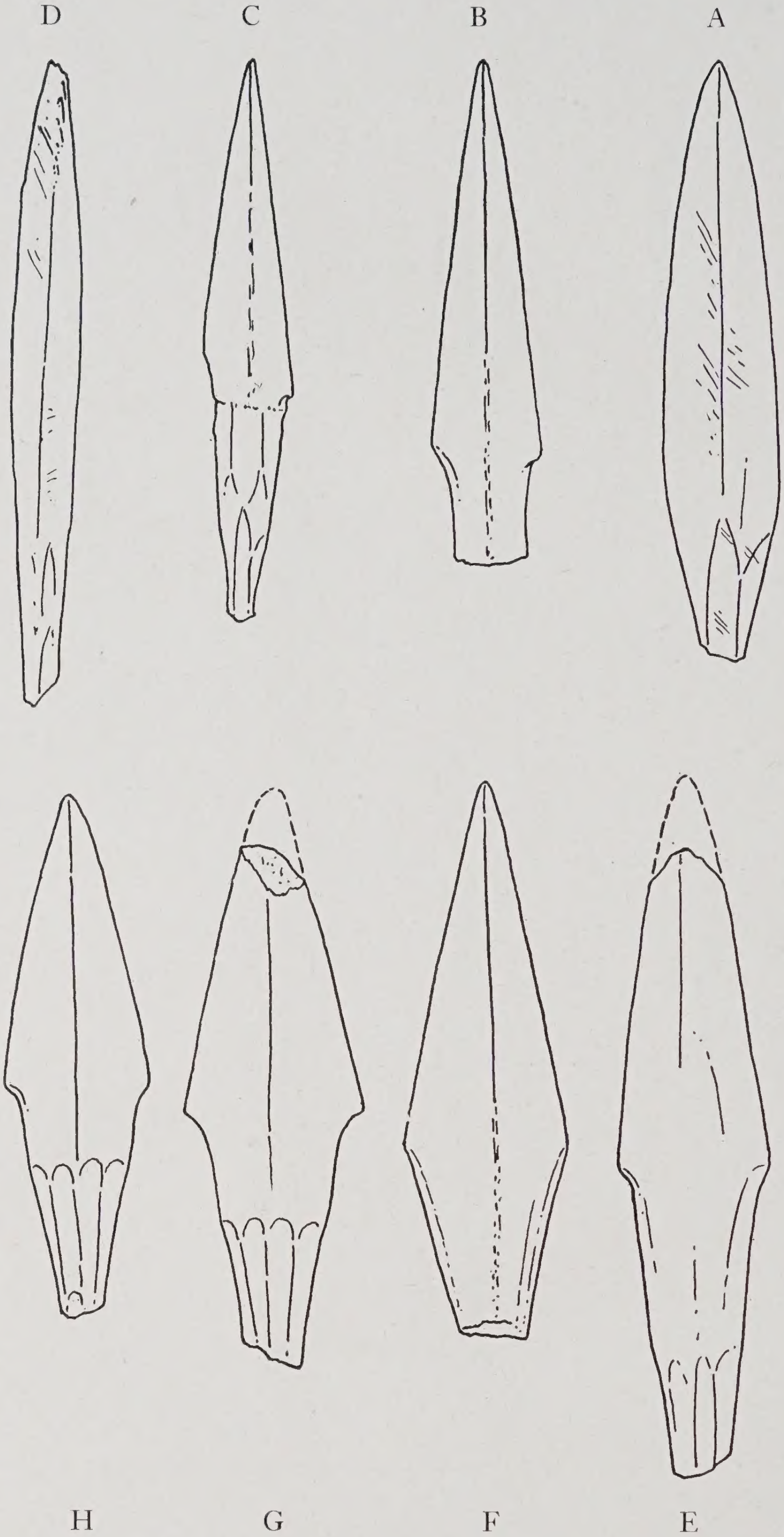
PLATE XCV



Various Forms of Bone Arrowheads.

A. NB. 2439 B. NB. 2930 C. NB. 2929 D. NB. 2927
E. NB. 2946 F. NB. 2932 G. NB. 2933 H. NB. 3106

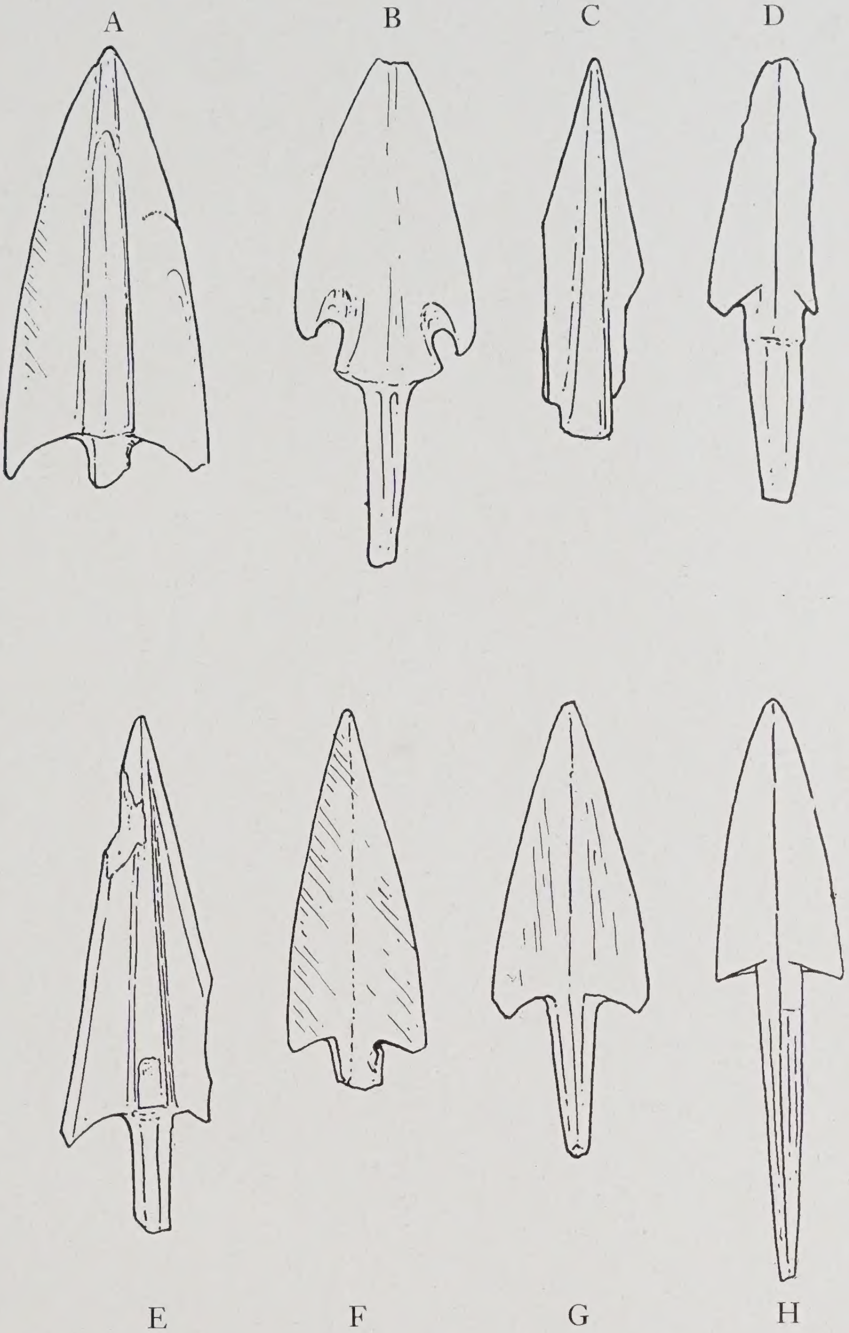
PLATE XCVI



Bone Arrowheads of Various Forms.

A. NB. 3939 B. NB. 6333 C. NB. 6332 D. NB. 6331
E. NB. 6336 F. NB. 6335 G. NB. 3946 H. NB. 6334

PLATE XCVII



Bone Arrowheads of Barbed Forms.

A. NB. 6337 B. NB. 2936 C. NB. 6338 D. NB. 6339
E. NB. 6340 F. NB. 6341 G. NB. 6342 H. NB. 6343

Plate XCVIII. Bone arrowhead and javelin forms.

It is difficult to differentiate between arrowheads and javelin points. They are probably the same in form, but the larger sizes could doubtless be considered as javelin points.

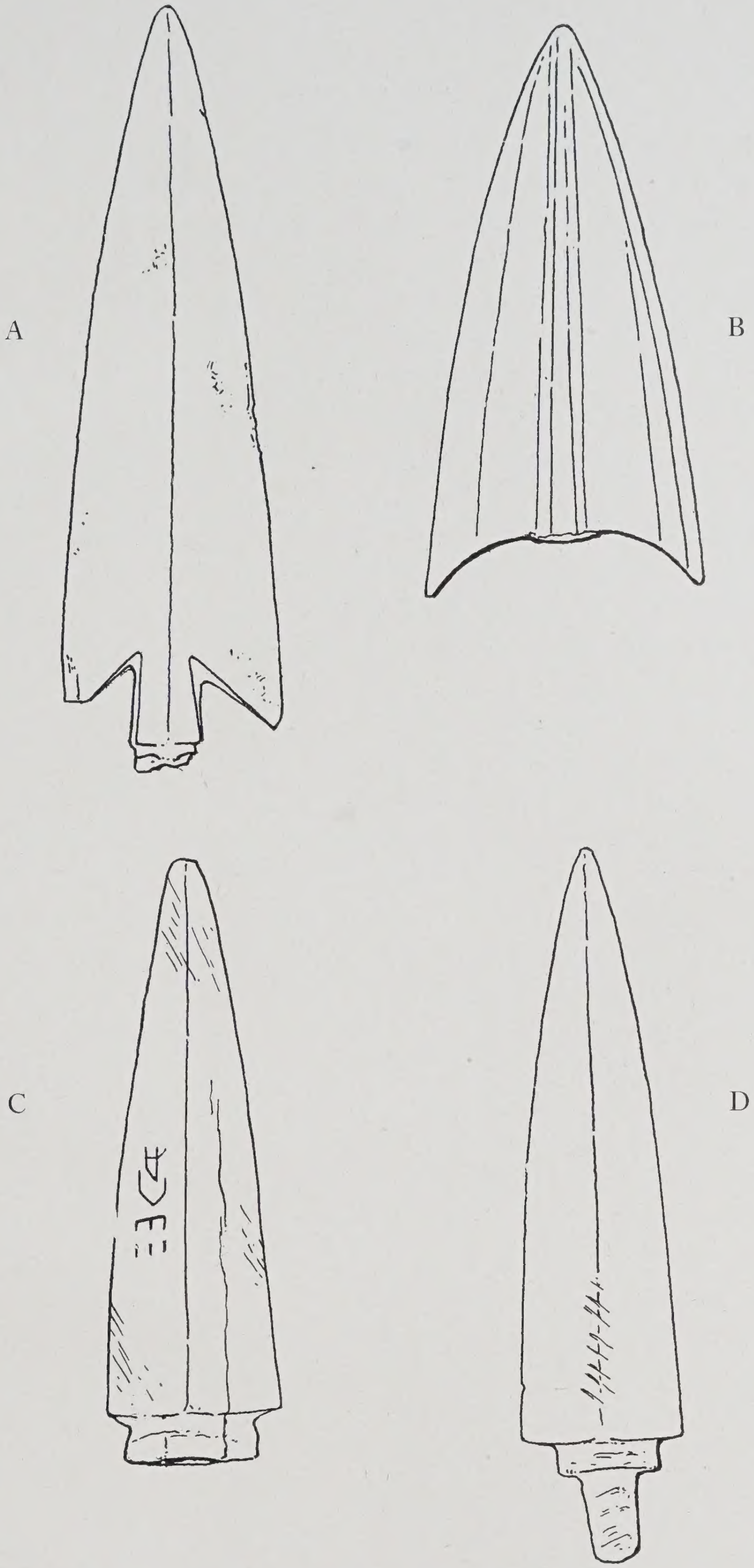
A. NB. 2934. Double-edged with barbed base. Slight mid-ridge on both sides. Stem broken off.

B. NB. 3190. Double-edged with barbed base. Pronounced mid-ridge on both sides. Stem entirely missing.

C. NB. 1776. Double-edged with slight mid-ridge on both sides. Pronounced base which is not barbed. Stem entirely missing. The incised inscription may not be genuine.

D. NB. 3315. Double-edged with slight mid-ridge on both sides. Base is not barbed, and stem is mostly missing.

PLATE XCVIII



Bone Arrowhead and Javelin Forms.

A. NB. 2934 B. NB. 3190 C. NB. 1776 D. NB. 3315

D. SHELL OBJECTS

Plates XCIX-CXIV

MOTHER-OF-PEARL objects and fragments have been quite plentiful in the archaeological finds at Anyang. The excavations at Hsün Hsien also have produced a considerable amount. Mussel shells and cowries and shell objects have been found in most of the Hsün Hsien tombs. In tomb 48 there were twenty-one mother-of-pearl fish, and tomb 49 had more than ten very large ones. Tomb 51 had over seventy, tomb 53 had seventy, tomb 55 had seventy-six, and tomb 57 had over a hundred of such mother-of-pearl fish. This mother-of-pearl was mainly obtained from the shells of the Unionoid commonly known as the "River Mussel." This is plentiful in the Yangtzu valley, and it is surmised that they were brought to Anyang from that region. In many of the tombs were cowries, which must have come from sea-coast areas. In the Toronto Museum there are specimens of at least three kinds of cowries obtained from the Anyang excavations, the "money" cowrie *Cypraea moneta*, the "ringed" cowrie *Cypraea annulus*, and *Cypraea helvola*, which had light brown markings.

These tomb cowries are found sometimes in rows, as if they had been attached to girdles or arranged in clumps. Many are complete specimens, but probably the greater number have had the domed top ground off. Some were artificially made from mother-of-pearl, probably to meet a deficiency in the supply of the natural cowries, and these were thin and flat. Later on, in the Chou Dynasty, artificial ones were made not only of mother-of-pearl, but of bone, and these were perforated with a single hole, or with two holes, probably for stringing or attachment as decoration. There were also bronze cowries in the later Chou, which were invariably gilt.

From early times in China the cowrie was used for decorative purposes, and for currency or as a means of barter. On the oracle bones it is found in the inscriptions in pictographic form, and meant cowrie, or precious or valuable. In modern Chinese it is *pei*, and still has the same meanings as in ancient days.

An early use of this character is given in the Book of History. It is there recorded that when King P'an Keng exhorted his people before crossing the river into Yin, that is the present Anyang, he made this statement: "Here are those ministers of my government, who share with me the offices of the State; and yet they only think of hoarding up cowries and gems" (*Shu Ching: The Book of Shang, Bk.* VII, *Pt. ii: 14. Legge*). Mussel shells and cowries were the more common shells found in the tombs, but there were also other kinds, such, for instance, as a clump of five sub-tropical gasteropods of the Oliva family, which came from an excavation at Anyang. These gasteropods had been perforated laterally, which was obviously for stringing purposes (*cp. Pl.* CXIV*: E*).

Great numbers of small flat pieces of mother-of-pearl, cut to obvious shapes, had been coming from Anyang, but no explanation of their use was evident. Then a group of 54 of such pieces, each carefully numbered to a facsimile diagram, revealed that these pieces were eyes and ears and teeth and borders of an animal mask (*Pl.* XCIX). This was followed by another similar mask with stone border and eyes and nose, but with mother-of-pearl teeth (*Pl.* C). These clearly explained the use of the many stone and shell fragments which had been forthcoming in such large quantities. Confirmation of the use of such animal masks comes from the Hsün Hsien tombs, where they have been found in bronze sectional pieces. In tomb number 8 there were found no less than seven such sectional masks (*fang hsiang*) in bronze.

Plate xcix. Tomb mask of shell sections. NB. 6344: 1-54. Scale: one-half.

Most of the fragments were stained with red ochre. The eyes were convex, similar to some of the discs on *Plates* cx and cxii.

Plate c. Tomb mask of stone and shell sections. NB. 6345. Scale: one-half.

The teeth only are of shell (*Pl.* ci: *B*). The border and eyes and nose are of thin white marble sections. The eyes are almost hemispherical. Most of the sections were stained with ochre. Amongst a number of similar stone sections, not of this mask, were two pieces with brush writing in red pigment giving instructions for placing. The inscriptions were "middle three" (*chung san*) and "east south earth" (*tung nan t'u*), that is "south-east place." These two sections are in the Toronto Museum.

Plate ci. Jaw details of animal shell masks.

A. Detail of *Plate* xcix. NB. 6344: 40-54.
B. Detail of *Plate* c. NB. 6345: 1-5.

Plate cii. Tusk forms of shell masks.

A. NB. 6346 B. NB. 6347 C. NB. 6348 D. NB. 6345(4)
E. NB. 6346(2) F. NB. 6344(44) G. NB. 6344(48)

Plate ciii. Teeth forms of shell masks.

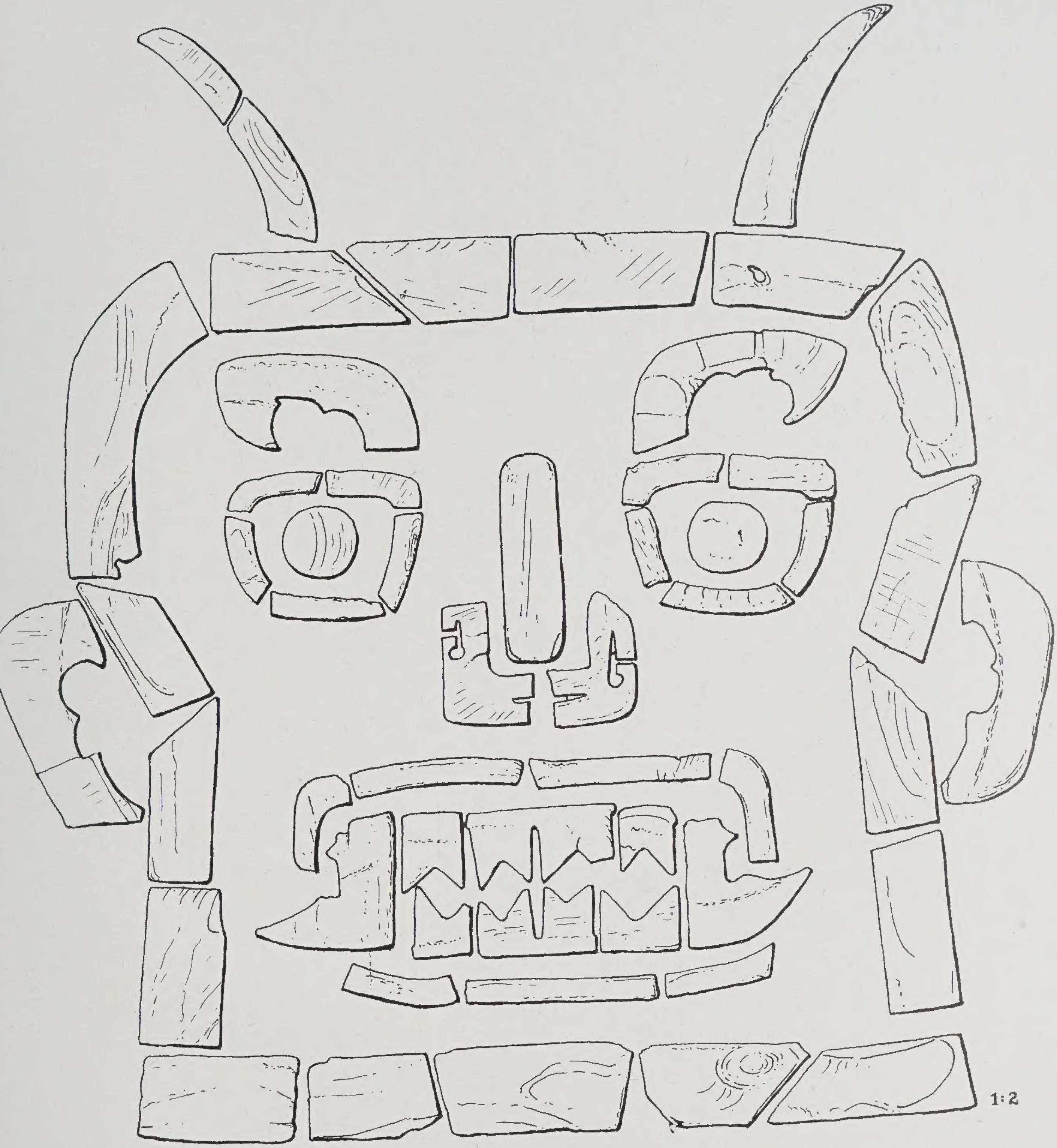
A. Section of four teeth. NB. 6345(5).
B. Single tooth broken from section. NB. 6349.
C. Two teeth broken from section. NB. 6344(50).
D. Single tooth. NB. 6350.
E. NB. 6351.
F. NB. 4085.
G. NB. 6352.
H. NB. 6353.
I. NB. 6354.

Plate civ. Various forms of shell sections. Each group of NB. numbers follows from left to right:

A. NB. 3080, 6355, 6356, 6357. B. NB. 6374, 6358, 6359, 6360, 6361.
C. NB. 6362, 6363, 6364, 6365. D. NB. 6366, 6367, 6368, 6369.

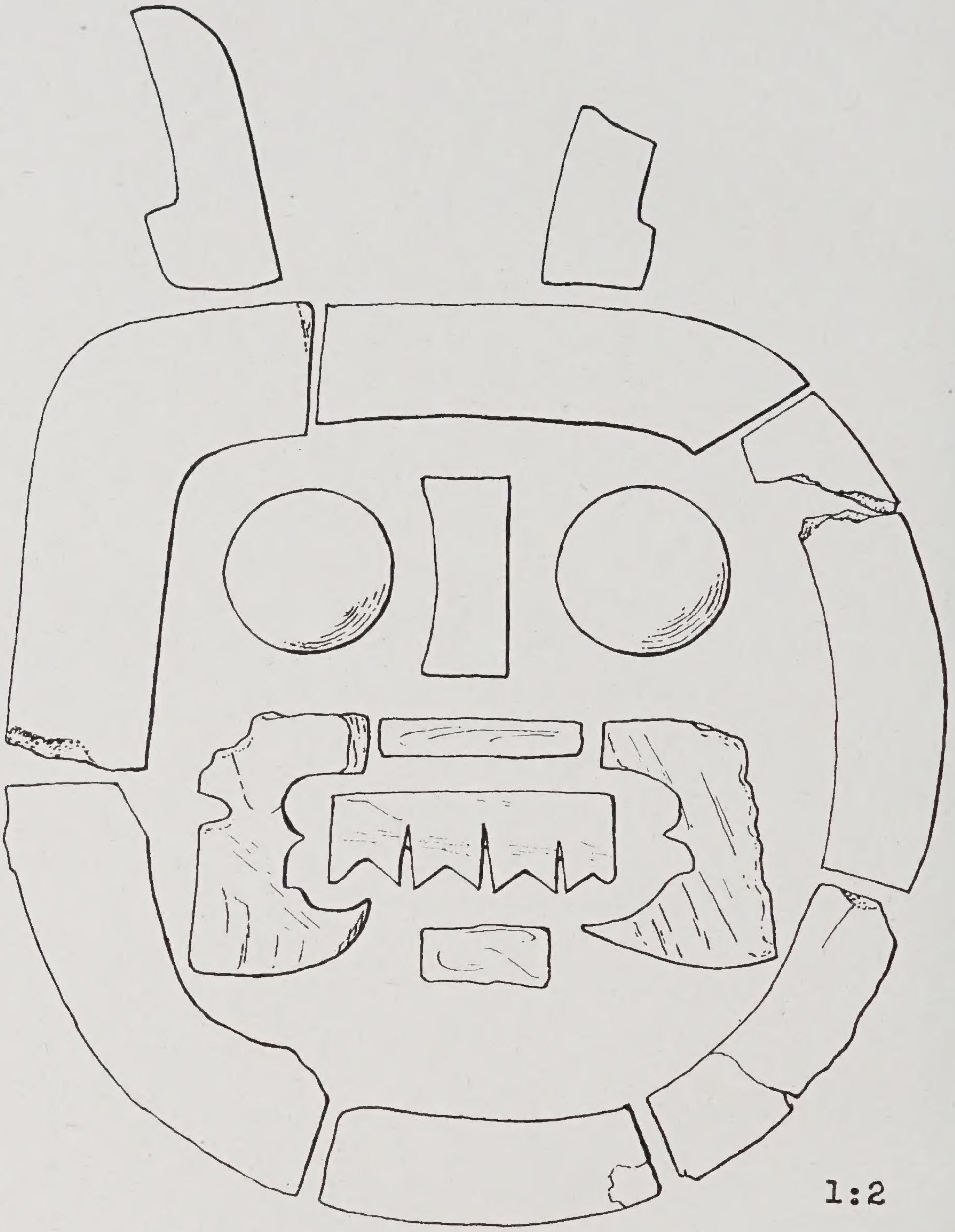
Plate cv. Various forms of shell sections. Each group of NB. numbers follows from left to right.

A. Top row. NB. 6370, 6371, 6372, 6373, 6045(3), 6375.
B. Centre. NB. 6376, 6377, 6378.
C. Bottom. NB. 6379, 6380, 6381, 6382.



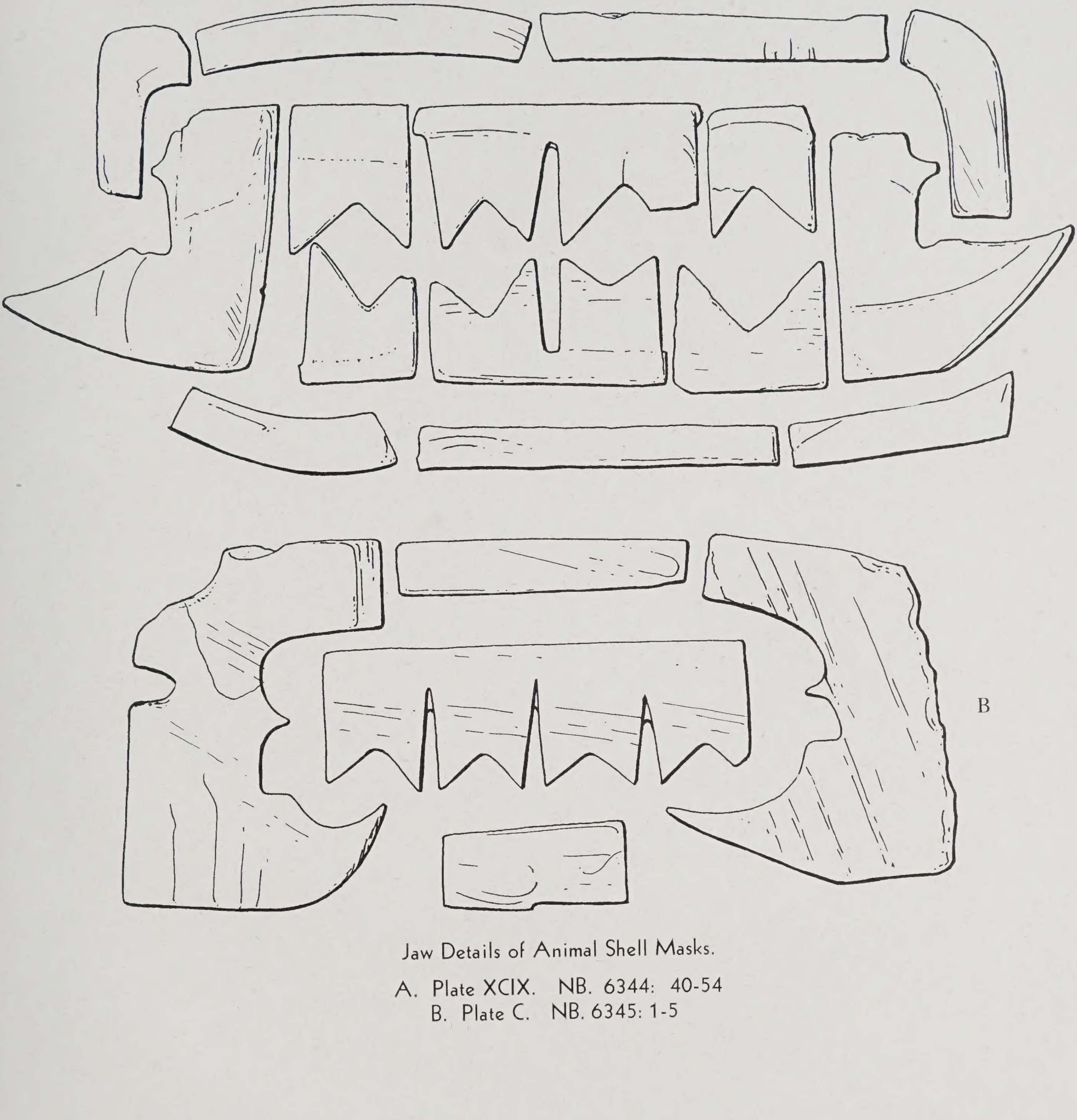
Tomb Mask (*fang hsiang*) of Shell Sections.

NB. 6344: 1-54 sections. Scale: one-half.



Tomb Mask (*fang hsiang*) of Stone and Shell Sections.

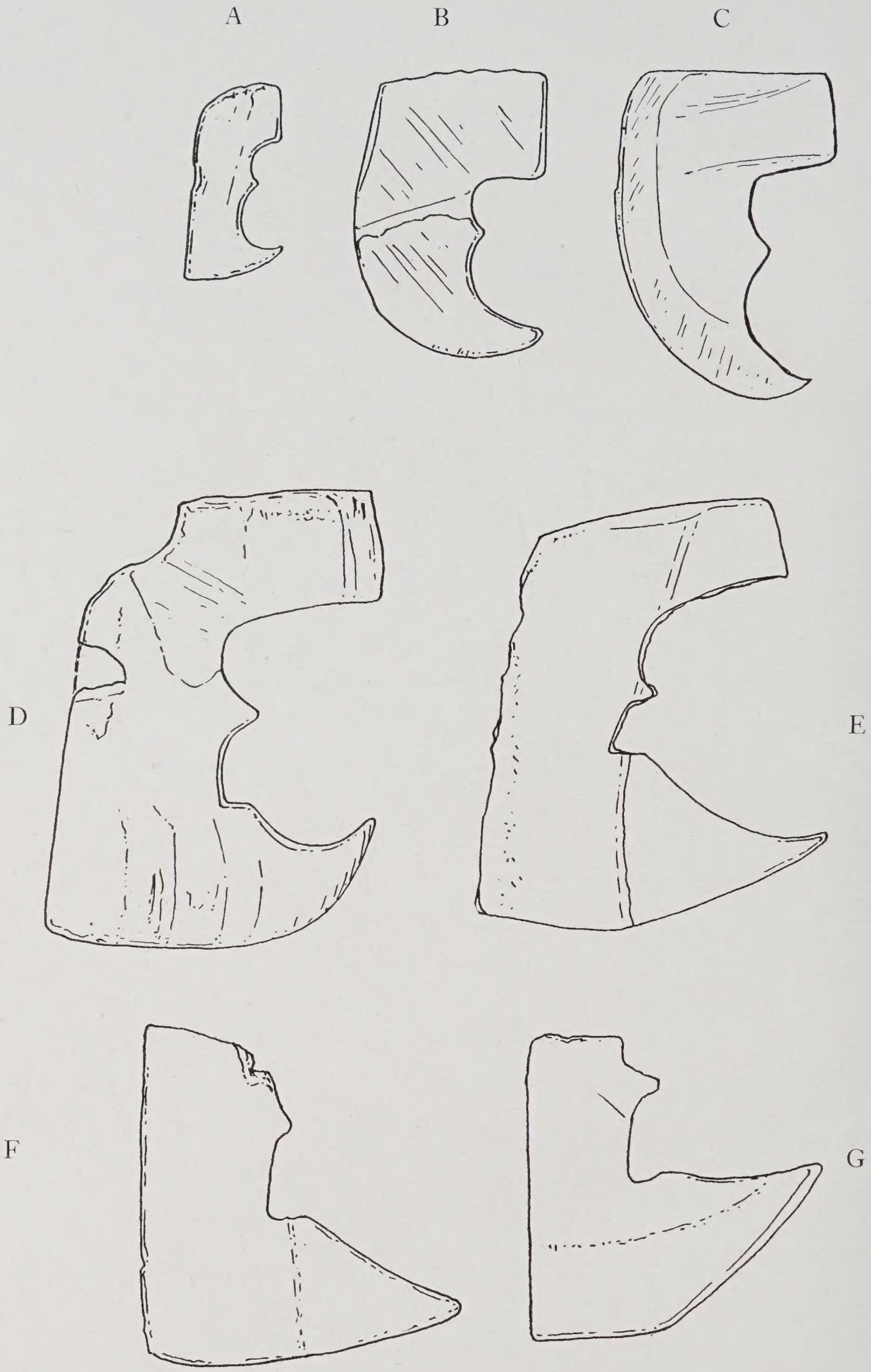
NB. 6345. Scale: one-half.



Jaw Details of Animal Shell Masks.

A. Plate XCIX. NB. 6344: 40-54
B. Plate C. NB. 6345: 1-5

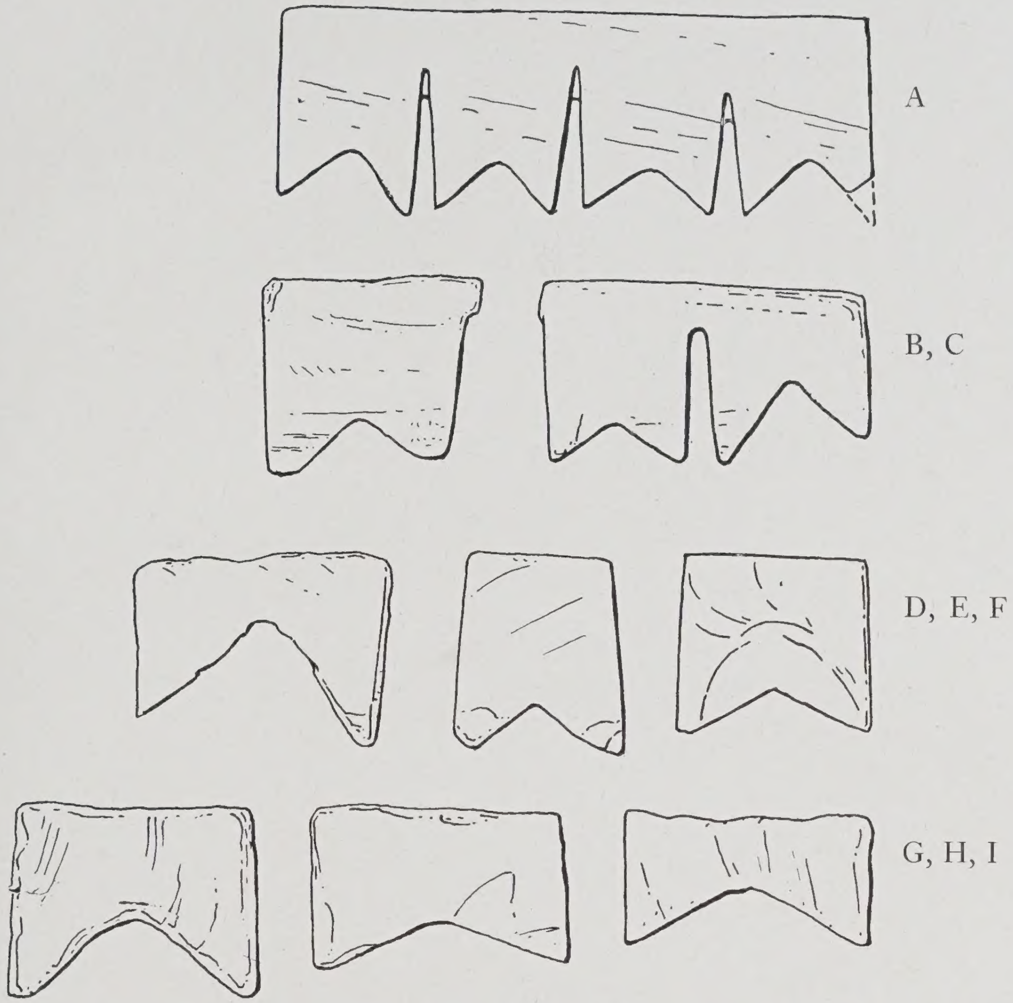
PLATE CII



Tusk Forms of Shell Masks.

A. NB. 6346   B. NB. 6347   C. NB. 6348   D. NB. 6345(4)
E. NB. 6346(2)   F. NB. 6344(44)   G. NB. 6344(48)

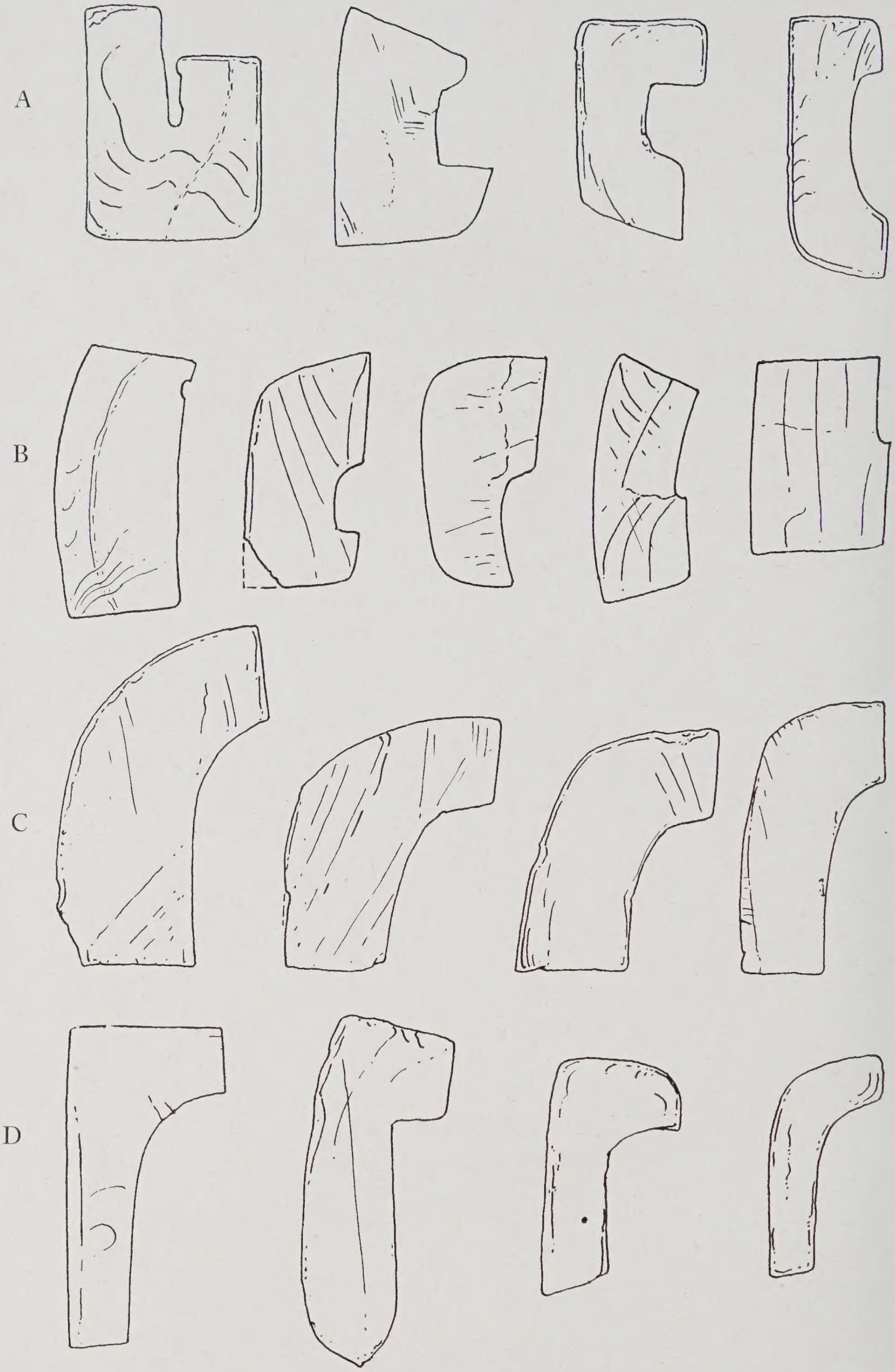
PLATE CIII



Teeth Forms of Shell Masks.

A. Section of Four Teeth. NB. 6345(5).
B. Single Tooth Broken from Section. NB. 6349.
C. Two Teeth Broken from Section. NB. 6344(50).
D. Single Tooth. NB. 6350 E. NB. 6351 F. NB. 4085
G. NB. 6352 H. NB. 6353 I. NB. 6354.

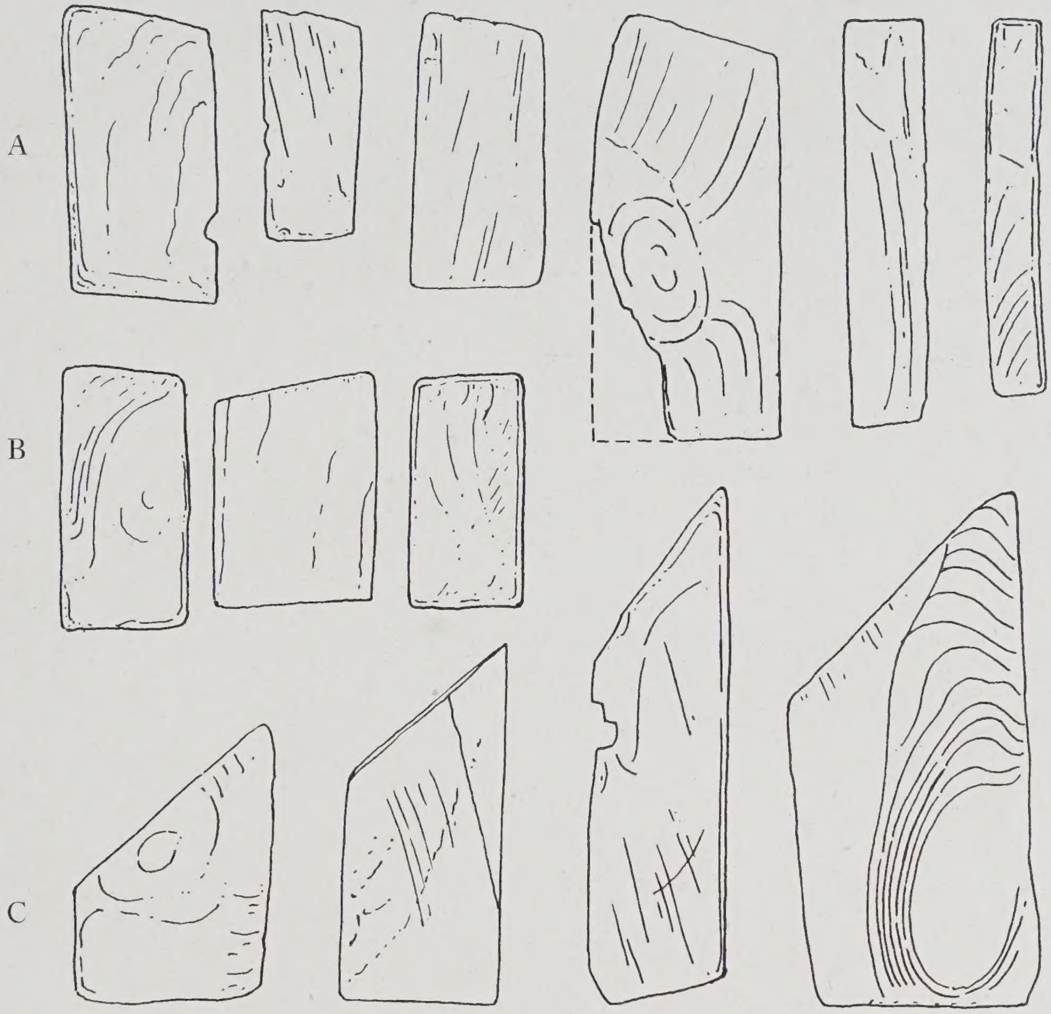
PLATE CIV



Various Forms of Shell Sections I.

The NB. numbers follow from left to right.
A. NB. 3080, 6355, 6356, 6357 B. 6374, 6358, 6359, 6360, 6361
C. NB. 6362, 6363, 6364, 6365 D. 6366, 6367, 6368, 6369

PLATE CV



Various Forms of Shell Sections II.

The NB. numbers follow from left to right.

A. Top row. NB. 6370, 6371, 6372, 6373, 6045 (3), 6375.
B. Centre. NB. 6376, 6377, 6378.
C. Bottom. NB. 6379, 6380, 6381, 6382.

Plate CVI. Carved shell objects.

A. Bird-form, perforated for pendant use. NB. 4082.

B. Plaque with marginal cuttings. NB. 6383.

C. Arc-shaped plaque, with marginal cuttings. NB. 4080.

These two latter show marginal cuttings which are commonly found on bronze marking vertical zones. Often they suggest stylization of the fur of animal monsters.

D. Flat pear-shaped plaque, with two perforations bored from both sides. N.B. 3792. This may be a shell spear-point, for similar shapes in jade are known to be spear-points.

Plate CVII. Carved shell objects.

A. Fish-shaped plaque, perforated at nose. NB. 4086.

B. Fish-shaped spatula, perforated at nose. NB. 3321.

C. Tail end fragment of fish. NB. 6384.

D. Probably tail end fragment of fish. NB. 3320.

E. Tail end fragment of fish. NB. 6385.

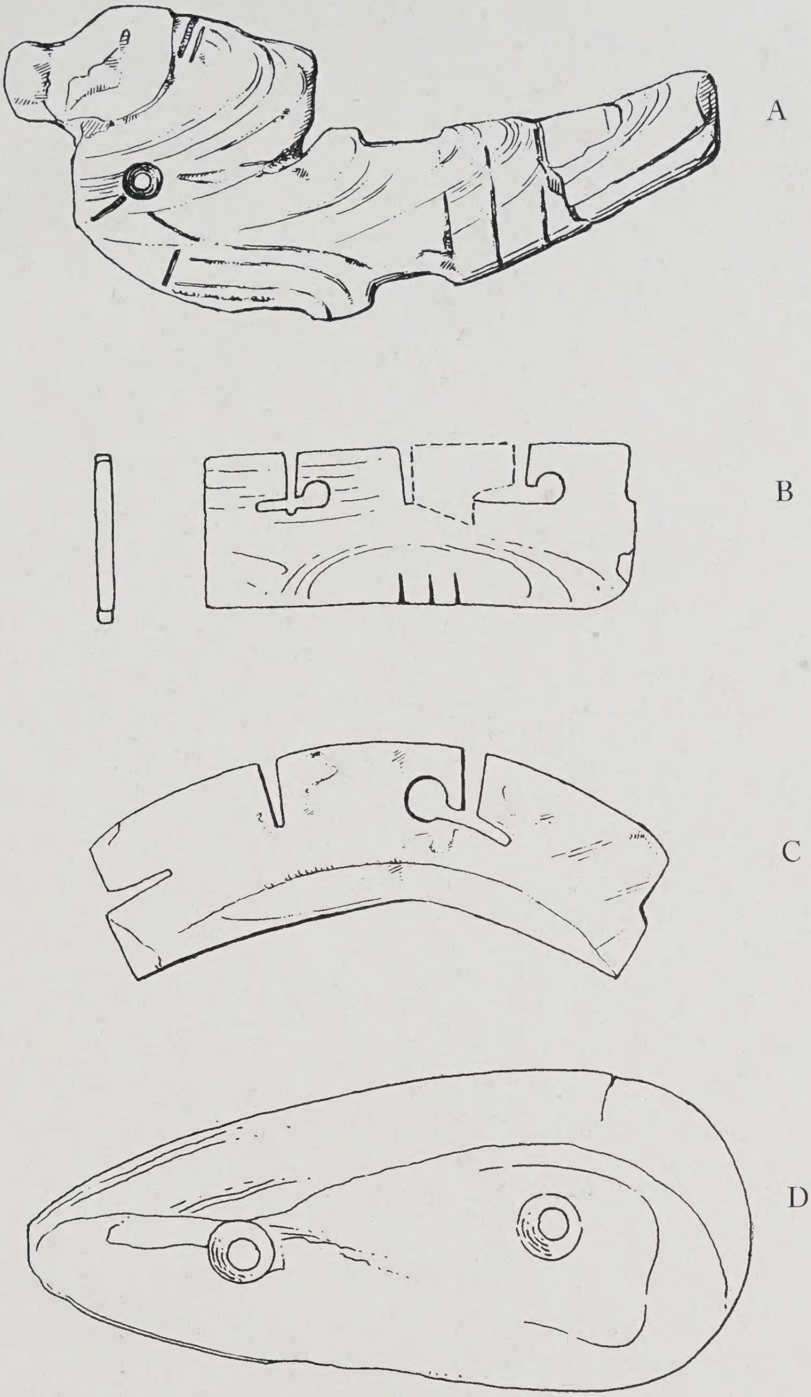
Plate CVIII. Carved shell cicadas.

A. Stylized cicada shaped shell, with vertical corrugations. NB. 4081. Perforated laterally. This shape is found in small bronze objects, and also in relief on bronze ceremonial vessels (*S. Umehara: Shina-kodo Seikwa; Osaka, 1933, Pl. 30*).

B. Hard shell object of cicada form, hollowed underneath so that the shell is very thin, and the inside is pigmented with ochre. NB. 3319.

C. Thick solid shell of cicada shape, with perforation bored from both sides for pendant suspension. NB. 4087.

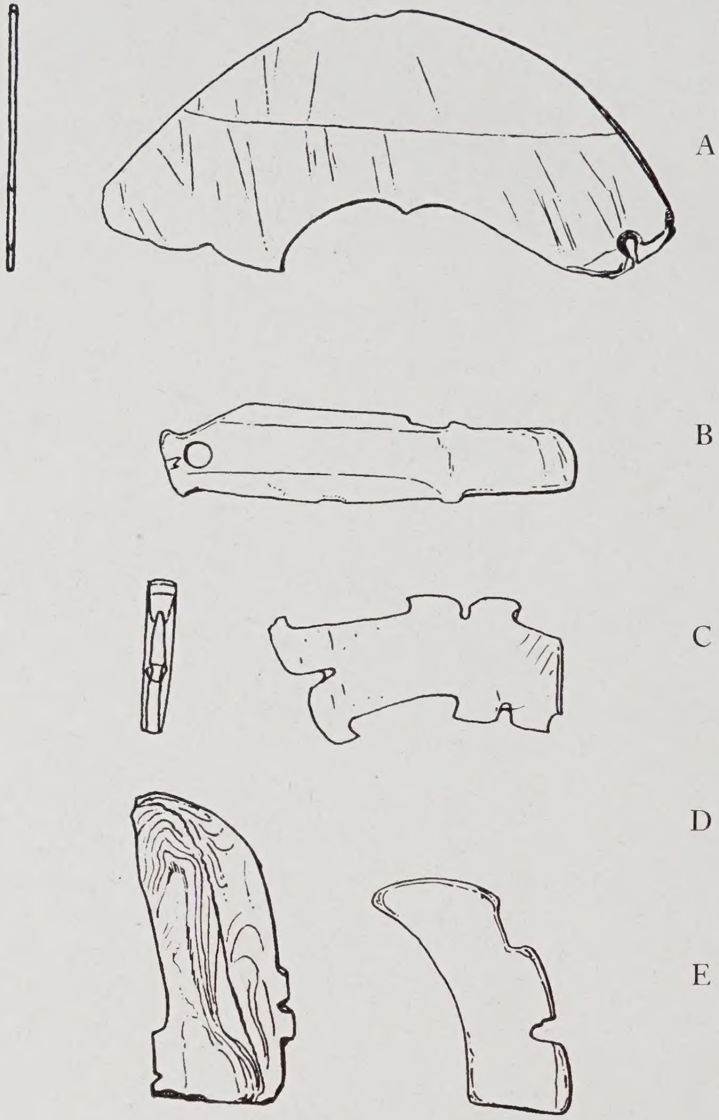
PLATE CVI



Carved Shell Objects I.

A. Bird-Form. NB. 4082. B. Plaque. NB. 6383.
C. Plaque. NB. 4080. D. Plaque. NB. 3792.

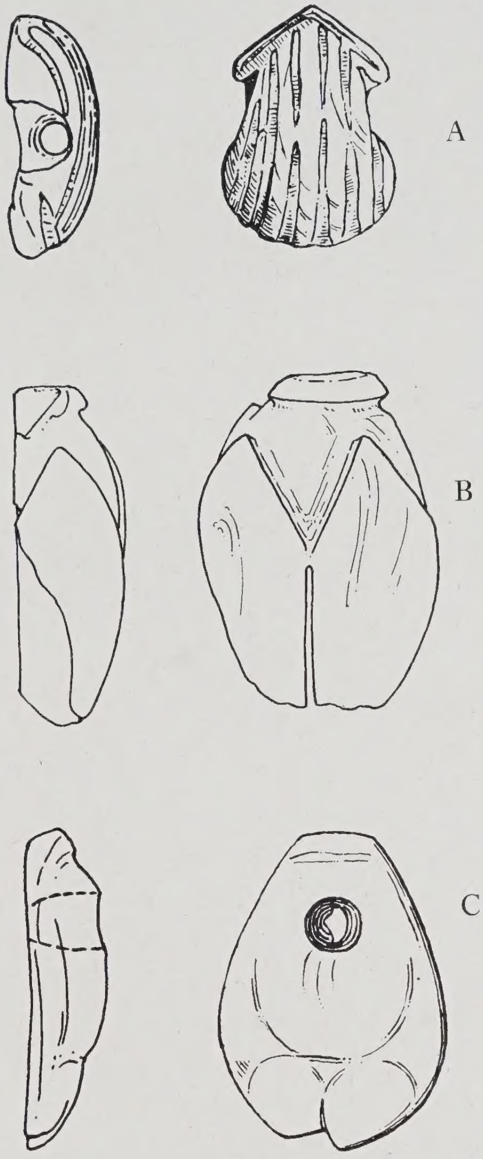
PLATE CVII



Carved Shell Objects II.

A. Fish. NB. 4086. C. Fish tail. NB. 6384.
B. Fish. NB. 3321. D. Fish tail. NB. 3320.
E. Fish tail. NB. 6385.

PLATE CVIII



Carved Shell Cicadas.

A. NB. 4081 B. NB. 3319 C. NB. 4087

Plate CIX. Carved shell whorls.

These three are bored in the centre, and are decorated on the convex surface with four spirals. They are doubtless spinning whorls.

A. NB. 3051 B. NB. 3050 C. NB 3049

Plate CX. Shell plaques or discs.

A. NB. 2991 B. NB. 4088 C. NB. 6386

These are not perforated, but A and B are notched at three points simulating a three-bladed whorl; C may have been an eye of a shell mask.

Plate CXI. Shell discs or whorls.

A. NB. 6388. A rosette-shaped disc, with centre perforation. This is doubtless a stylized animal form, and the eye of the animal is the central perforation.

B. NB. 2994. C. NB. 2993. These two convex discs are perforated in the centre, and from this point spiral lines radiate to the circumference.

Plate CXII. Shell discs or whorls.

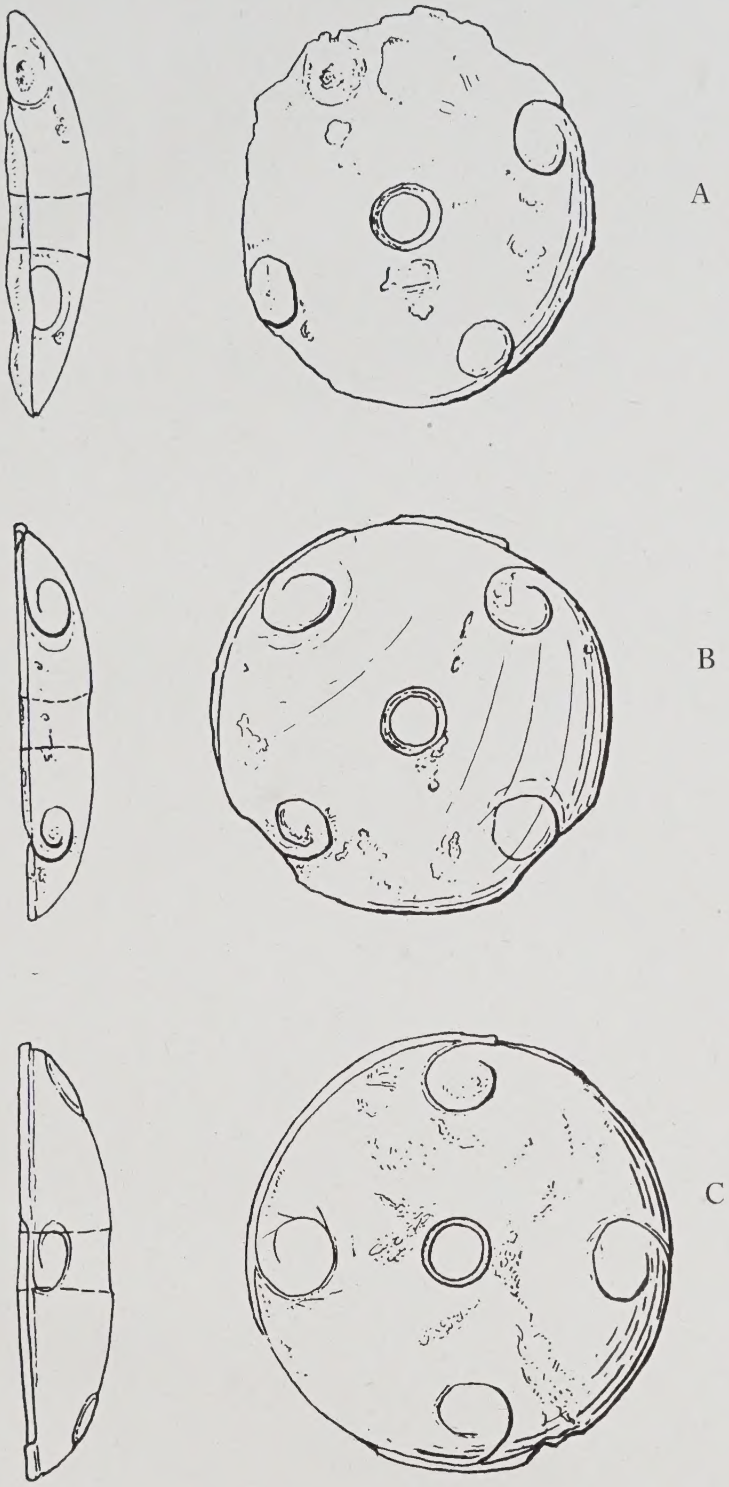
A. NB. 5177. Plain disc, without centre hole. Probably eye of animal mask.

B. NB. 6387. Plain disc, with centre perforation.

C. NB. 6390. D. NB. 6389. These two are as B.

EF. NB. 6391. Top, side, and under aspects of a three-blade disc. The underside is pierced similar to the eye of a button.

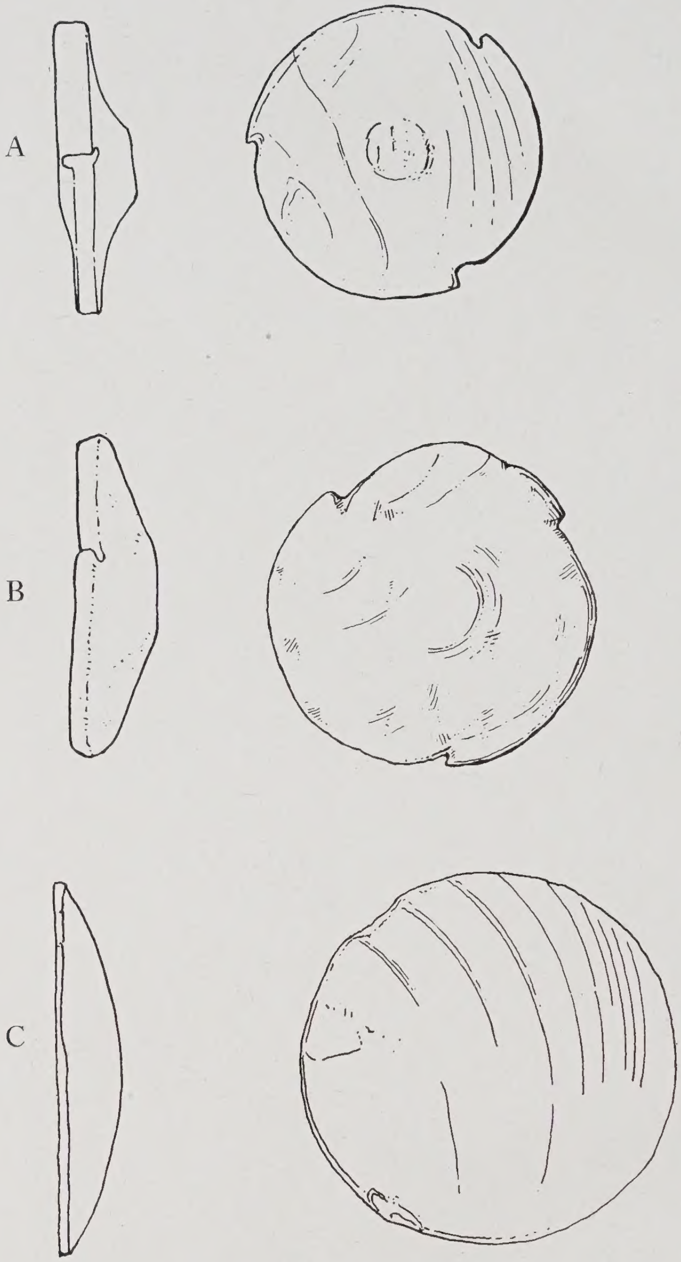
PLATE CIX



Carved Shell Whorls.

A. NB. 3051 B. NB. 3050 C. NB. 3049

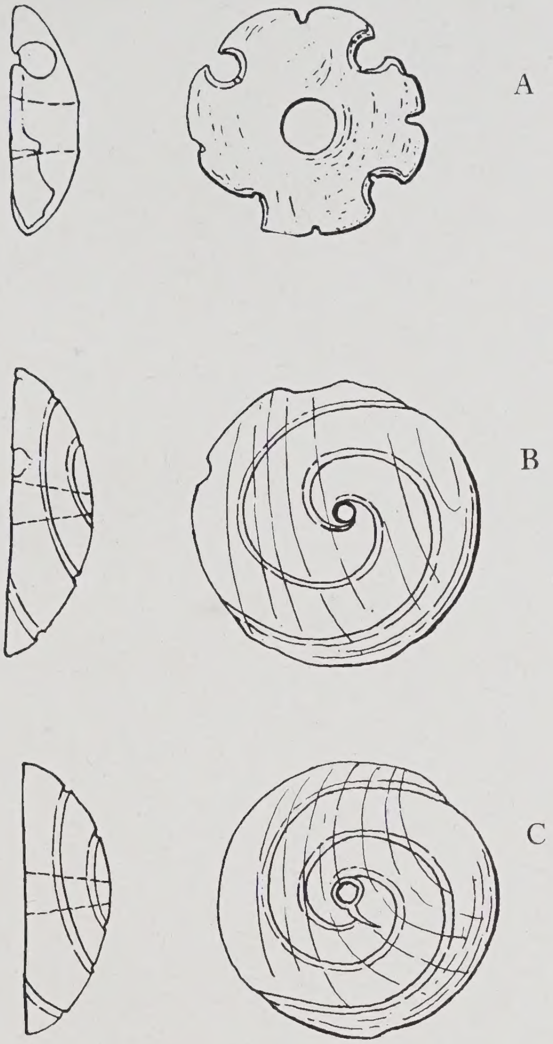
PLATE CX



Shell Plaques or Disks.

A. NB. 2991 B. NB. 4088 C. NB. 6386

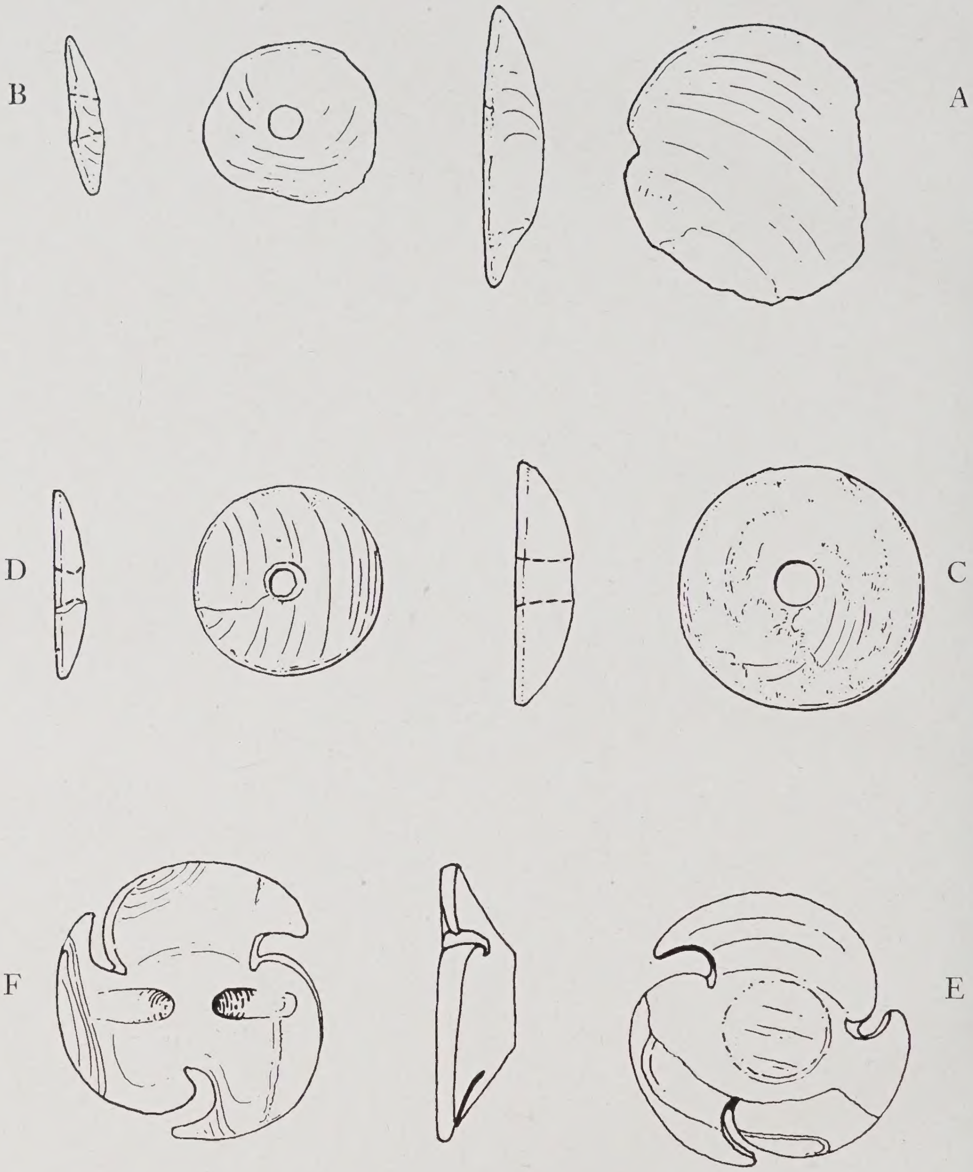
PLATE CXI



Shell Disks or Whorls I.

A. NB. 6388 B. NB. 2994 C. NB. 2993

PLATE CXII



Shell Disks or Whorls II.

A. NB. 5177 B. NB. 6387 C. NB. 6390 D. NB. 6389 EF. NB. 6391
Top, side, and under aspects.

Plate CXIII. Small shell objects.

A. Rectangular plaque, with surface carved in ridges. NB. 6392.
B. Rectangular plaque, similar to A but smaller. NB. 6393.
C. Ivory top of spindle whorl. Conical. NB. 6394.
D. Triangular plaque of unknown use. NB. 2995.
E. Triangular plaque similar to the latter. NB. 2996.

Plate CXIV. Shell objects.

A. Artificially carved cowrie. NB. 6396.
B. Natural cowrie shell, from under side. NB. 1151.
C. Cowrie with dome ground down. NB. 6397.
D. Shell made beads, similar to wampum.

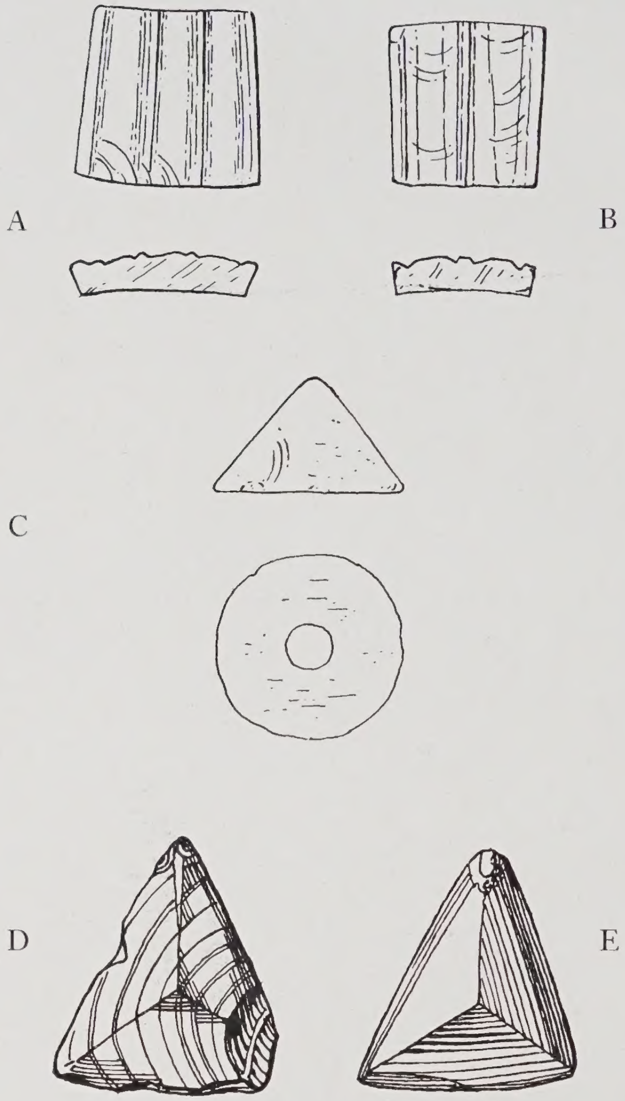
Small 1-3. NB. 6398, 6399, 6400. These were found in large numbers and were apparently in strings.

Large bead, number 4. NB. 6395. These also were apparently in strings.

E. Marine shell. A gasteropod of the Oliva family. NB. 3322. Several of these were found together, all were perforated laterally for stringing.

F. Shell-made arrowhead. NB. 2992.

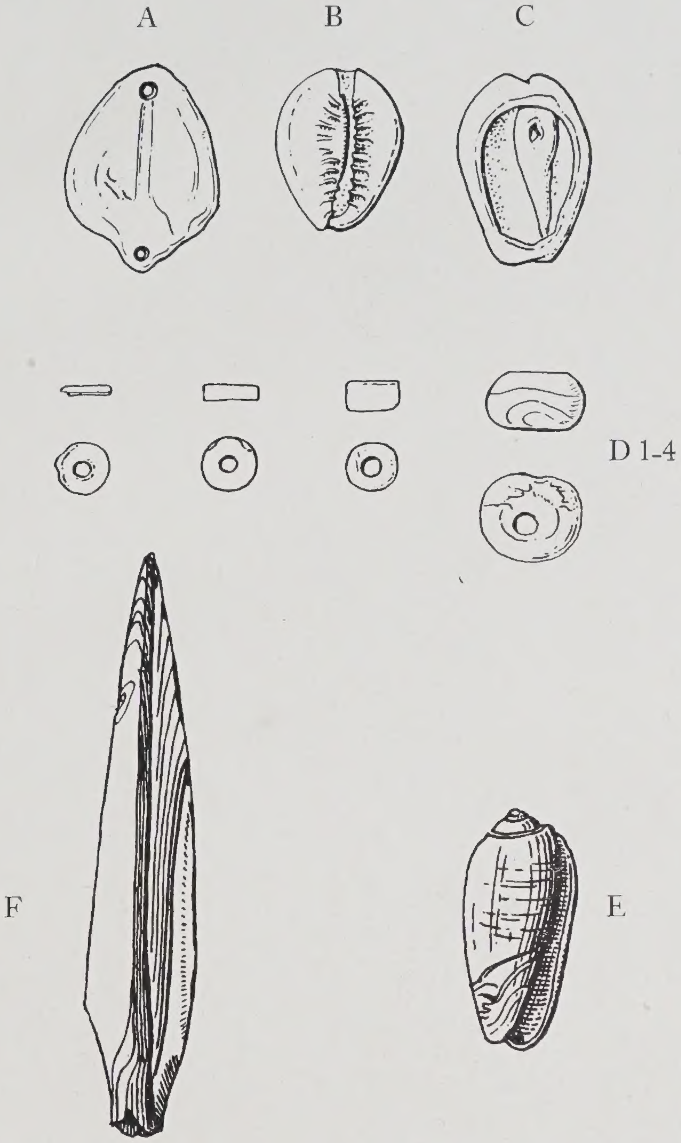
PLATE CXIII



Small Shell Objects.

A. Plaque. NB. 6392. C. Spindle Whorl. NB. 6394.
B. Plaque. NB. 6393. D. Triangular Plaque. NB. 2995.
E. Triangular Plaque. NB. 2996.

PLATE CXIV



Shell Objects.

A. Carved Cowrie-Form. NB. 6396.
B. Natural Cowrie Shell. NB. 1151.
C. Ground Down Cowrie. NB. 6397.
D. 1-4. Shell-Made Beads. NB. 6398, 6399, 6400, 6395 (large one).
E. Marine Shell. NB. 3322.
F. Shell-Made Arrowhead. NB. 2992.

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